TECHNOLOGY DEPT:

April 30, 1941

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DETROIT

NATIONAL PETROLEUM NEWS

DEVELOP INTERIOR COATINGS FOR AVIATION FUEL DRUMS

Moisture corrosion problem in aviation fuel drums stimulates development of improved coatings for drum interiors. Many firms taking active part in development.

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• • •

REFINERY USES OF MOLDED CARBON DESCRIBED AT W.P.R.A. MEETING

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• • •

CONTROL POINT COMPUTED FOR CRACKING FURNACE

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NEWS IN BRIEF

Illinois basin crude hiked by several large purchasers. Page 5.

* * *

Cole still sees no need for federal oil control as national defense measure; Southeastern pipeline settlement believed near. Page 5.

* * *

Gasoline tax hike of 1c per gal. listed as "most productive." Page 5.

* * *

California producers appoint committee to investigate operating costs. Page 8.

Rails turn down proposed 1c per gal. cut in Mid-West rates. Page 16.

* * *

Oil industry workers get wage increases, averaging 5c per hour. Page 10.

* * *

Recycling and liquefied petroleum gas discussions highlight annual convention of Natural Gasoline Assn. of America. Page 13. Alois P. Kremser gets Hanlon award. Pages 4 and 13.

* * *

Oil Group seeks resolution for "uniform" octane test. Page 13.

REFINING TECHNOLOGY EDITION

HERE'S YOUR BEST TRUCK TANK INSURANCE!
Fig. 204C
Fig. 202C
Fig. 131
Reduce the hazards of highway disasters —protect your truck tanks—install MORRISON TRUCK TANK EMERGENCY VALVES. Sturdily built, of special alloy materials, unfailing in action, tight closing. Can be easily and quickly installed. Write for further information and prices.

MORRISON BROS. COMPANY

OIL EQUIPMENT HEADQUARTERS

DUBUQUE, IOWA

COMING MEETINGS

MAY

American Trucking Assn., Inc., 2nd Annual Spring Forum, Continental Hotel, Kansas City, Mo., Sun.-Wed., May 4-7.
American Gas Assn., Natural Gas Section, Dallas, Tex., Mon.-Thurs., May 5-8.
Independent Oil Men's Assn. of New England, Annual Convention, Copley Plaza Hotel, Boston, Mass., Thurs., May 8.
Kansas Oil Men's Assn., annual meeting, Broadview Hotel, Wichita, Kans., Monday, May 12.
Society of Automotive Engineers, Production Meeting, Schroeder Hotel, Milwaukee, Wis., Mon.-Tues., May 12 and 13.
Independent Petroleum Assn. of America, mid-year meeting, Plaza Hotel, San Antonio, Tex., Tues., May 13.
Virginia Petroleum Jobbers Assn., Spring Meeting, John Marshall Hotel, Richmond, Va., Thurs., May 15.
Virginia Oil Men's Assn., annual spring meeting, John Marshall Hotel, Richmond, Va., Fri., May 16.
American Institute of Chemical Engineers, 33rd Semi-Annual Meeting, Edgewater Beach Hotel, Chicago, Ill., Mon.-Wed., May 19-21.
American Petroleum Institute, 11th Mid-Year Meeting, Mayo Hotel, Tulsa, Okla., Mon.-Fri., May 19-22.
National Assn. of Purchasing Agents, (Oil Company Buyers' Group) Stevens Hotel, Chicago, Mon.-Thurs., May 26-29.
National Oil Scouts & Land Men's Assn., Dallas, Tex., Thurs.-Sat., May 29-31.

JUNE

Society of Automotive Engineers, Summer Meeting, The Greenbrier, White Sulphur Springs, W. Va., Sun.-Fri., June 1-6.
Illinois-Indiana Petroleum Assn., 9th Annual Petroleum Conference, Robinson, Ill., Sat., June 7.
Liquefied Petroleum Gas Assn., Inc., Pacific Coast Section, Fairmont Hotel, San Francisco, Calif., Mon.-Tues., June 9-10.
Oil Trades Assn. of New York, Sports Day, Pelham Country Club, Pelham Manor, N. Y., Tues., June 10.
American Society of Mechanical Engineers, Petroleum Division, Kansas City, Mo., Mon.-Fri., June 16-20.
Pennsylvania Grade Crude Oil Assn., Annual Meeting, Bradford, Pa., Thurs.-Fri., June 19-20.
Kentucky Oil & Gas Assn., Mid-Year Meeting, Lexington, Ky., Fri.-Sat., June 20-21.
American Society for Testing Materials, 44th Annual Meeting, Palmer House, Chicago, Ill., Mon.-Fri., June 23-27.
New Jersey Oil Trade Assn., Spring Golf Outing and Dinner, Suburban Golf Club, Union, N. J., Tues., June 24.

AUGUST

National Assn. of Petroleum Retailers, 9th Annual Convention, La Salle Hotel, Chicago, Ill., Tues.-Thurs., Aug. 19-21.

SEPTEMBER

American Chemical Society, Atlantic City, N. J., Mon.-Fri., Sept. 8-12.
Oil Trades Assn. of New York, Sports Day, Pelham Country Club, Pelham Manor, Pelham Manor, N. Y., Tues., Sept. 9.
National Petroleum Assn., Hotel Traymore, Atlantic City, N. J., Wed-Fri., Sept. 17-19.
Society of Automotive Engineers, National Tractor Meeting, Schroeder Hotel, Milwaukee, Wis., Thurs.-Fri., Sept. 25-26.
New Jersey Oil Trade Assn., Fall Golf Outing and Dinner, Suburban Golf Club, Union, N. J., Fri., Sept. 26.
National Lubricating Grease Institute, 9th Annual Meeting, Stevens Hotel, Chicago, Ill., Mon.-Tues., Sept. 29-30.

OCTOBER

Texas Mid-Continent Oil & Gas Assn., Beaumont, Tex., Tues.-Thurs., Oct. 9-11.
American Institute of Mining & Metallurgical Engineers, Petroleum Division, Dallas, Tex., Thurs.-Sat., Oct. 16-18.
Society of Automotive Engineers, National Aircraft Production Meeting, Baltimore Hotel, Los Angeles, Calif., Thurs.-Sat., Oct. 30-Nov. 1.
California Natural Gasoline Assn., Los Angeles, Calif., Fri., Oct. 31.

NOVEMBER

American Institute of Chemical Engineers, 34th annual meeting, Cavalier Hotel, Virginia Beach, Va., Mon.-Wed., Nov. 3-5.
American Petroleum Institute, 22nd Annual Meeting, San Francisco, Calif., Mon.-Fri., Nov. 3-7.
American Assn. of Petroleum Geologists, Los Angeles, Calif., Thurs.-Fri., Nov. 6-7.

NATIONAL PETROLEUM NEWS

APRIL 30, 1941

NEWS

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WARREN C. PLATT, *Editor and Publisher*
V. B. GUTHRIE, *Managing Editor*

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THIS WEEK WITH NPN

HILL-BILLIES

There's real foldin' money—for the first time—in the jeans of many "hill-billies" in southern Virginia's mountain country now that Uncle Sam is building defense plants in the Radford-Roanoke area. So much money in fact that they are buying new lubricating oil instead of crankcase drainings for their wheezing jallopies. This week's article on how the defense program is affecting oil marketing centers on the country made famous by the book "The Trail of the Lonesome Pine." NPN tells how the "city folk" are catching their first glimpse of these live-alone-and-like-its as they come out in the open and rattle past on their way to the "bullet factories" — or, to the "gas" station to "get the best yer got."

BALL-UP

Max W. Ball, author of "This Fascinating Oil Business," was recently asked to speak before a Canadian club. The club wired requesting the title of his talk, and Mr. Ball wired back: "Anglo-American Responsibilities for Germany's Oil Supply." Well, you've probably guessed it — the telegraph company had balled the message up and it of course should have read: "Anglo-American Responsibilities *or* Germany's Oil Supply."

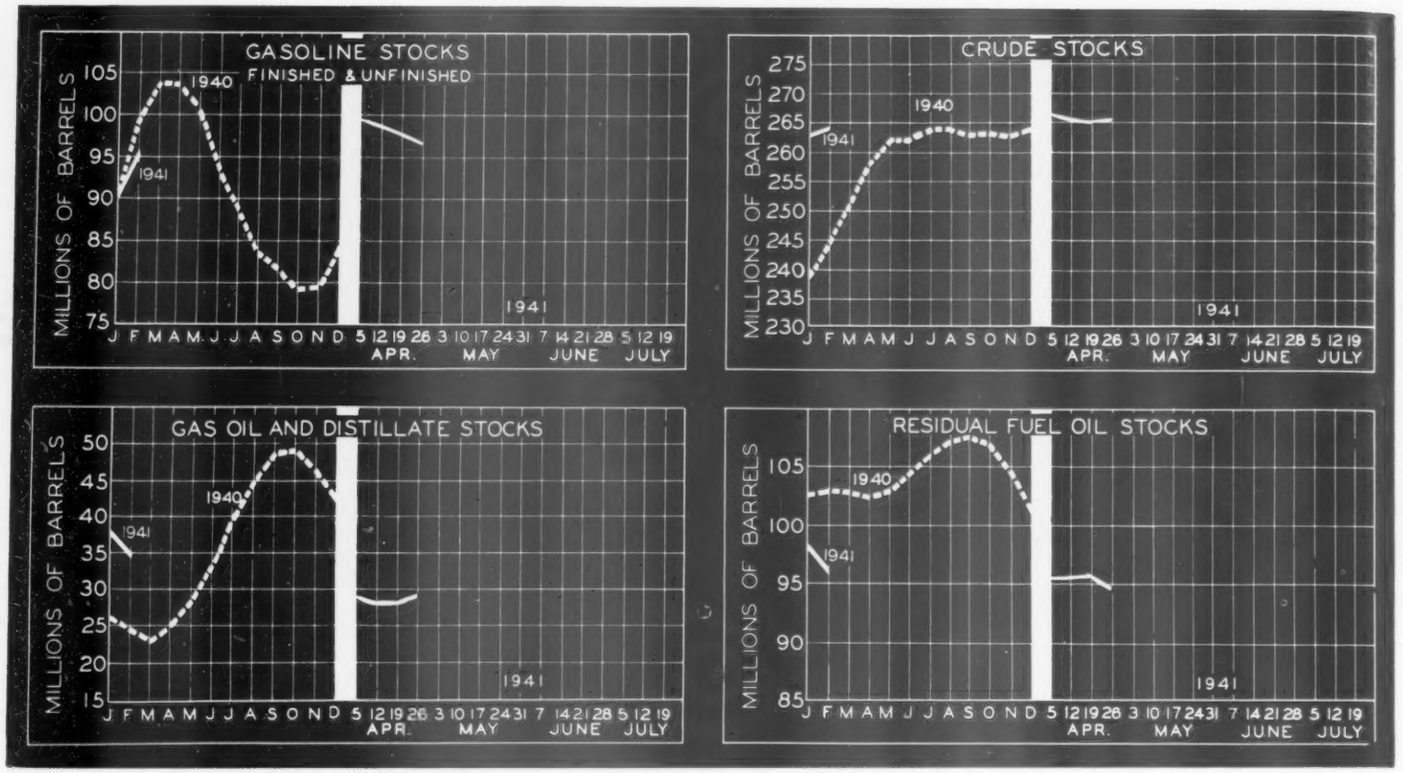
LONDON

One of the largest companies of its kind in London in writing to NPN says, "It may interest you to know that yours is the only foreign publication to which we subscribe . . . and we find through the medium of your paper that we are able to keep ourselves well informed as to what is going on . . ."

REFINERIES

From time to time, NPN receives requests for lists of refineries operating in the United States and Canada. Such a list is available in our OIL PRICE HANDBOOK for 1940 but as many inquirers wanted only the refinery information NPN started preparing such a list. Now, booklets listing refineries, their personnel, capacity, and other valuable information can be obtained from NPN at $1.00 per copy.

•STATISTICS•


GASOLINE STOCKS
FINISHED & UNFINISHED
MILLIONS OF BARRELS
1940
1941
1941
J F M A M J J A S O N D 5 12 19 26 3 10 17 24 31 7 14 21 28 5 12 19
APR. MAY JUNE JULY
CRUDE STOCKS
MILLIONS OF BARRELS
1940
1941
1941
J F M A M J J A S O N D 5 12 19 26 3 10 17 24 31 7 14 21 28 5 12 19
APR. MAY JUNE JULY
GAS OIL AND DISTILLATE STOCKS
MILLIONS OF BARRELS
1940
1941
1941
J F M A M J J A S O N D 5 12 19 26 3 10 17 24 31 7 14 21 28 5 12 19
APR. MAY JUNE JULY
RESIDUAL FUEL OIL STOCKS
MILLIONS OF BARRELS
1940
1941
1941
J F M A M J J A S O N D 5 12 19 26 3 10 17 24 31 7 14 21 28 5 12 19
APR. MAY JUNE JULY

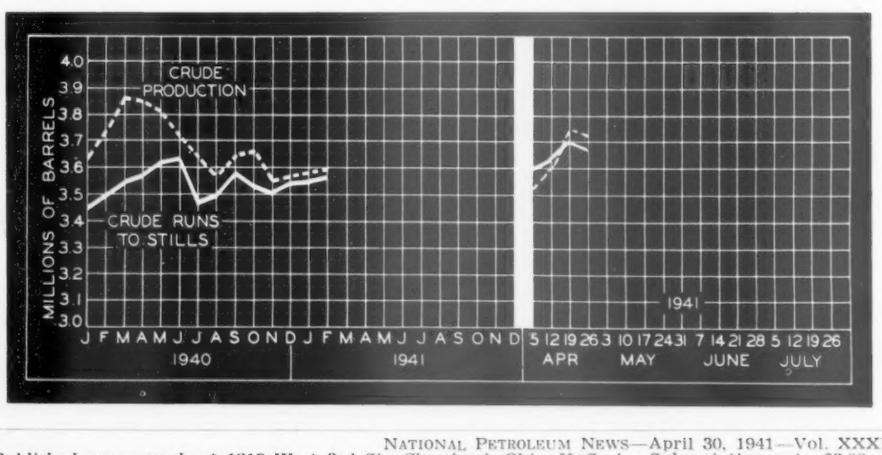
A.P.I. Report of Refinery Operations

(Figures in Thousands of Barrels of 42 Gallons Each)

Districts	Daily Average Crude Runs to Stills Week Ended		Per Cent of Reporting Capacity Operated Week Ended		Gasoline Production at Refineries incl. Natural Blended Week Ended		Total Stocks Finished & Unfinished Gasoline Week Ended		Total Stocks Gas Oil & Distillates Week Ended		Total Stocks Residual Fuel Oil Week Ended		Stocks Aviation Gasoline Included in Finished & Unfinished Gasoline Total Week Ended	
	Apr. 26	Apr. 19	Apr. 26	Apr. 19	Apr. 26	Apr. 19	Apr. 26	Apr. 19	Apr. 26	Apr. 19	Apr.26	Apr. 19	Apr. 26	Apr. 19
East Coast	537	536	83.5	83.4	1,456	1,601	20,177	21,411	7,641	7,208	8,483	8,659	**East Coast**	
Appalachian	129	131	90.8	92.3	467	473	3,197	3,270	381	372	470	451	578	637
Ind., Ill., Ky.	601	554	89.7	82.7	2,265	2,126	18,313	18,423	2,392	2,254	3,211	3,001		
Okla., Kans., Mo.	274	280	84.8	86.7	1,046	1,049	8,663	8,646	1,254	1,197	1,962	1,966	**Interior**	
Inland Texas	129	128	77.2	76.6	540	654	2,236	2,245	337	322	1,387	1,396	902	887
Texas Gulf	898	928	94.2	97.2	2,939	3,002	15,612	15,298	5,250	4,985	6,367	6,555	**Gulf Coast**	
La., Gulf	128	137	80.0	85.6	384	358	3,398	3,382	1,142	1,059	2,117	2,219	3,501	3,417
N. La., Ark.,	52	52	100.0	100.0	138	139	600	586	294	302	590	586		
Rocky Mt.	58	61	85.3	89.7	230	236	1,720	1,689	150	152	476	475	**California**	
California	539	564	73.8	77.3	1,623	1,536	15,956	16,074	10,172	10,059	68,059	68,698	1,681	1,638
Reported	3,345	3,371	85.5	86.2	11,088	11,174	89,872	91,024	29,013	27,910	93,122	94,006	6,662	6,579
Estimated Unreported	330	334			1,395	1,400	6,775	6,875	530	500	1,610	1,630	270	260
U. S. Total*	3,675	3,705			12,483	12,574	96,647	97,899	29,543	28,410	94,732	95,636	6,932	6,839
U. S. Total 4-26-40*	3,566				11,379		103,587		24,758		102,513		5,118	

*Estimated, U. S. Bureau of Mines basis.

U. S. Crude Oil Production


CRUDE PRODUCTION
CRUDE RUNS TO STILLS
MILLIONS OF BARRELS
1941
J F M A M J J A S O N D J F M A M J J A S O N D 5 12 19 26 3 10 17 24 31 7 14 21 28 5 12 19 26
1940
1941
APR MAY JUNE JULY

(American Petroleum Institute figures)

	—WEEK ENDED— April 26 Barrels (Daily Average)	April 19 Barrels (Daily Average)
Oklahoma	419,450	415,100
Kansas	213,400	218,500
Nebraska	4,300	4,250
Texas	1,395,200	1,403,200
Louisiana	306,050	308,300
Arkansas	71,850	71,600
Mississippi	27,650	22,750
Illinois	327,150	329,050
Indiana	21,750	19,450
Eastern (Ill. & Ind. excluded)	90,700	92,400
Michigan	37,100	37,400
Wyoming	80,250	79,550
Montana	19,400	19,400
Colorado	3,800	3,850
New Mexico	108,800	108,550
California	600,000	619,300
Total U. S.	3,726,850	3,752,650
Crude Imports	113,715	120,140
Total New Supply	3,840,565	3,872,790

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·STATISTICS·

N. P. N. Gasoline Index

	Dealer T.W. Cents per	Tank Car Gallon
Apr. 28	9.26	5.68
Month ago	8.82	5.32
Year ago	9.46	5.66

Dealer index is an average of "undivided" dealer prices, ex-tax, in 50 cities.

Tank car index is a weighted average of 9 wholesale markets for regular-grade gasoline.

Crude Oil Stocks

(U. S. Bureau of Mines Figures; Thousands of Barrels)

Grade or Origin	Apr. 12	Apr. 19	Change from Apr. 12
Pennsylvania Grade	4,296	4,274	— 22
Other Appalachian	1,495	1,508	+ 13
Lima-Michigan	1,070	1,057	— 13
Illinois-Indiana	22,184	21,914	—270
Arkansas	2,853	2,846	— 7
Kansas	8,873	9,066	+193
Louisiana	12,617	12,828	+211
Northern	4,113	4,205	+ 92
Gulf Coast	8,504	8,623	+119
Mississippi	877	922	+ 45
New Mexico	7,132	7,101	— 31
Oklahoma	63,317	62,455	—862
Texas:	85,066	85,589	+523
East Texas	20,677	21,213	+536
West Texas	15,575	16,017	+442
Gulf Texas	23,861	23,638	—223
Other Texas	24,953	24,721	—232
Rocky Mountain	15,569	15,607	+ 38
California	37,251	37,642	+391
Foreign	2,560	2,662	+102
Total U. S. refinable	265,160	265,471	+311
Heavy in California	12,055	12,327	+272

Inventories, Mar. 31, 1941, of Pennsylvania Oils Other Than Lubricating Oils

(Compiled by National Pet. Ass'n. from reports of oil region refiners. Figures in barrels.)

1—NAPHTHAS & GASOLINE

(1) Straight run, unblended and/or unleaded, for sale as motor fuel	44,393
(2) Naphtha and gasoline, for sale for blending or further refining, or held at refinery for further distillation, reforming, blending or leading	192,181
(3) Below 65 octane, not included in (1) or (2) above	12,122
(4) 65 octane & above	395,395
2—Salable naphthas other than motor fuel material (does not include Refinery Process Naphthas)	26,202
3—Kerosine	56,305
4—36-40 gas oil (includes furnace oil)	34,130
5—Fuel Oil (not reported above)	20,714
6—Oils held as cracking plant charging stocks	258,776
7—Non-viscous neutral	23,142
8—Wax distillate	76,253
9—Crude petrolatum	14,996
10—Wax (lbs.)	*6,077,533

*Corrected inventory figure for Feb. 28, 1941 of 5,844,149 lbs. has been issued by NPA.

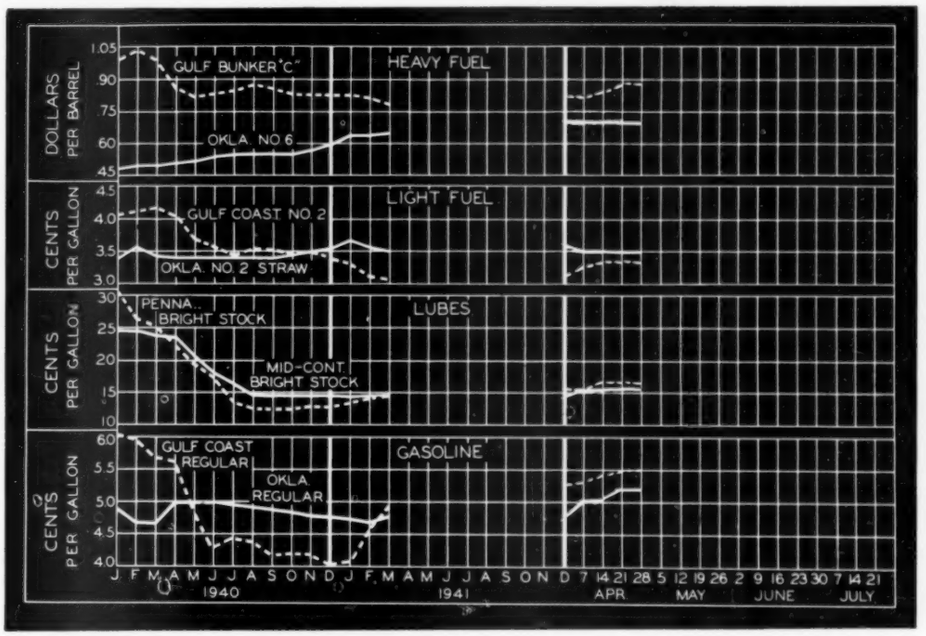
Pennsylvania Crude Runs

(Compiled by National Petroleum Assn. from reports of all companies that refined Pennsylvania crude. Figures in barrels.)

Week Ended 1941	Daily Average		
Jan. 4	60,635	Mar. 1	68,969
Jan. 11	71,543	Mar. 8	65,810
Jan. 18	75,854	Mar. 15	76,617
Jan. 25	74,429	Mar. 22	73,851
Feb. 1	74,363	Mar. 29	73,592
Feb. 8	75,735	Apr. 5	75,127
Feb. 15	73,712	Apr. 12	72,045
Feb. 22	71,890	Apr. 19	76,970
		1940 Low	58,516
		1940 High	85,584

REFINERY PRICES

(Monthly prices in graphs are averages of daily high and low prices shown in Platt's Oilgram. Weekly prices are averages of high and low prices shown in Monday Oilgram, and in National Petroleum News.)


DOLLARS PER BARREL
GULF BUNKER "C"
HEAVY FUEL
OKLA. NO. 6
CENTS PER GALLON
GULF COAST NO. 2
LIGHT FUEL
OKLA. NO. 2 STRAW
PENNA. BRIGHT STOCK
LUBES
MID-CONT. BRIGHT STOCK
GULF COAST REGULAR
GASOLINE
OKLA. REGULAR
J F M A M J J A S O N D J F M A M J J A S O N D 7 14 21 28 5 12 19 26 2 9 16 23 30 7 14 21
1940
1941
APR
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JUNE
JULY

Natural Gasoline Production and Stocks

(Bureau of Mines Figures; Thousands of Gallons)

	Production				Stocks —Feb. 28, 1941—		—Jan. 31, 1941—	
	Feb. 1941	Jan. 1941	Jan.-Feb. 1941	Jan.-Feb. 1940	At refineries	At plants and terminals	At refineries	At plants and terminals
East Coast	....	....	....	....	3,234	....	5,418	....
Appalachian	8,502	9,291	17,793	17,172	168	6,885	168	5,882
Ill., Mich., Ky.	4,412	4,854	9,266	4,258	3,486	819	3,150	798
Oklahoma:	28,498	31,516	60,014	63,088	2,520	22,240	2,100	21,472
Oklahoma City	5,689	6,537	12,226	14,340	(1)	7,977	(1)	7,502
Osage County	4,087	4,018	8,105	7,807	(1)	6,109	(1)	6,374
Seminole	7,808	8,805	16,613	17,105	(1)	3,014	(1)	2,960
Rest of State	10,914	12,156	23,070	23,836	(1)	5,140	(1)	4,636
Kansas	6,712	6,851	13,563	11,656	84	811	126	705
Texas:	80,399	83,773	164,172	128,625	3,864	74,000	5,418	77,589
Gulf	19,360	20,135	39,495	23,250	2,898	29,306	4,326	28,720
East Texas	11,599	12,490	24,089	26,339	(1)	516	(1)	461
Panhandle	23,257	22,352	45,609	43,699	(1)	38,430	(1)	42,765
North Texas	2,000	2,180	4,180	4,572	(1)	589	(1)	569
West Central	4,777	5,328	10,105	10,584	(1)	1,536	(1)	1,665
Rest of State	19,406	21,288	40,694	20,181	(1)	3,623	(1)	3,409
Louisiana	9,126	9,275	18,401	18,010	252	2,103	168	2,616
Arkansas	2,530	2,906	5,436	3,249	294	276	336	326
Rocky Mountain	7,059	7,876	14,935	13,267	3,444	1,697	3,738	1,862
California:	44,492	48,786	93,278	95,575	94,962	1,923	96,894	1,814
Huntington Beach	2,332	2,564	4,896	5,203	(1)	(1)	(1)	(1)
Kettleman Hills	9,373	10,482	19,855	20,519	(1)	(1)	(1)	(1)
Long Beach	6,780	7,427	14,207	14,280	(1)	(1)	(1)	(1)
Santa Fe Springs	4,258	4,662	8,920	9,243	(1)	(1)	(1)	(1)
Ventura Avenue	4,546	5,031	9,577	10,587	(1)	(1)	(1)	(1)
Rest of State	17,203	18,620	35,823	35,743	(1)	(1)	(1)	(1)
Total	191,730	205,128	396,858	354,900	112,308	110,754	117,516	113,064
Daily average	6,848	6,617	6,726	5,915	....	....	....	....
Total (thousands of barrels)	4,565	4,884	9,449	8,450	2,674	2,637	2,798	2,692
Daily average	163	158	160	141	....	....	....	....

(1) Not available.

Production and Inventory of Pennsylvania Lubricating Oils

(Compiled by National Petr. Ass'n. from reports of all companies which refine Penna. crude. Figures in bbls. of 42 U. S. gals.)

	Total Production For March, 1941	Inventory Mar. 31, 1941	Inventory Feb. 28, 1941	Inventory Mar. 31, 1940
1—RAW LONG RESIDUUM (includes all raw long residuum below, and not salable as, 600 fire)	71,511	28,839	33,978	24,522
2—600 STEAM REFINED STOCK (includes all steam refined stock commonly sold or used as 600 and as raw material for bright stock)	271,442	262,538	249,247	247,454
3—OTHER STEAM REFINED STOCK (not included in 1 & 2 above)	61,365	102,976	102,212	61,119
4—FINISHED DEWAXED LONG RESIDUUM	49,154	66,344	72,230	90,538
5—BRIGHT STOCK (does not include any material reported in 4 above)	152,492	458,458	477,891	362,986
6—VISCOUS NEUTRAL, below 180 vis. but not below 142 vis. at 100	64,551	66,485	83,889	164,750
7—VISCOUS NEUTRAL, 180 vis. at 100 and above	101,795	129,117	134,260	131,653

Kremser Gets Hanlon Award for 1941

Alois P. Kremser

The Hanlon award, recognized as the highest honor in the natural gasoline industry and one of the ranking merit awards in the petroleum industry, was presented this year to Alois P. Kremser.

Presentation of award was made by George P. Bunn, president of Natural Gasoline Assn. of America, at this organization's annual meeting in Dallas, Tex., April 23-25.

Mr. Kremser is assistant manager of research and development for Standard Oil Co. of California. He was born in Vallach, Austria, in 1888 and was educated at the University of Vienna.

Mr. Kremser's treatise on "Theoretical Analysis, the Key to Absorption Plant Design" is widely used in textbooks on petroleum technology. This contribution to absorption, distillation, fractionation and heat exchange is said to have marked the beginning of thorough mathematical analysis of these processes. Married and the father of 3 children, 2 girls and a boy who are now attending University of California, Mr. Kremser makes his home in San Francisco where he pursues his hobbies of gardening, skating, skiing and fishing.

NATIONAL PETROLEUM NEWS

VOLUME 33 WEDNESDAY, APRIL 30, 1941 NUMBER 18

Cole Oil Group Gets Extension

N. P. N. News Bureau

WASHINGTON, April 29. — House of Representatives has approved resolution (H. Res. 188) introduced by Chairman Cole extending life of House Oil Investigating Subcommittee until January 3, 1942.

"This will give the committee the opportunity to study the question of oil production and its attendant problems in the light of needs created by the present emergency and make such recommendations from time to time as the changing conditions may require in making proper defense for our nation and its people," Rep. Wolverton told House.

Following return of Cole Committee from its southern field trip, the chairman gave impression that members are not convinced of any urgent need for federal oil control as national defense measure.

Chairman Cole stated subcommittee intends to report shortly on Southeast pipeline situation.

"It is pleasing to the committee to be able to report at this time, however, preliminary to our final report, that the petroleum industry is apparently in shape to meet almost any conceivable demand made upon it in these serious times," Mr. Cole said. "The conduct of certain states toward conservation of this most important natural resource is not what it should be, but we are hopeful before our final report is made that the situation will be materially improved."

Lakes Tanker Strike Nears Settlement

N. P. N. News Bureau

CLEVELAND, April 29.— Strike of seamen on 5 Great Lakes tankers and 1 barge owned by Cleveland Tankers, Inc., was reported nearer settlement today, following 9-hour meeting yesterday of company officials and representatives of the Great Lakes Officers Assn. (C.I.O.) before National Labor Relations Board conciliators.

Strike, which broke out April 7, was reported by some Michigan refiners as having "tied up" gasoline deliveries. The 5 tankers and 1 barge involved, all empty, are in port.

Proposed Federal 1c 'Gas' Tax Hike Listed as 'Most Productive Revenue'

N. P. N. News Bureau

WASHINGTON, April 28.— A one-cent per gallon hike in the federal gasoline tax is listed as most productive revenue raiser, by Assistant Secretary of Treasury John L. Sullivan, in outlining Treasury's $3,600,000,000 tax program to House Ways and Means Committee.

Sullivan estimates gasoline tax increase would raise $255,000,000 out of a total of $867,300,000 to be secured through new excise taxes. However, he made no direct statement on his recommendation for a 1c increase in gasoline taxes, although when speaking on new excise taxes in general he did say:

Select 'Luxury' Items

"We have endeavored to avoid excise taxes which would fall on basic necessities of life and excises which, while productive, would constitute an increase in the cost of doing business and thus would be passed on to the government and to the public in general price increases. We have, however, selected certain luxury articles which, though widely used, are not necessities.

"It is suggested that in the light of our over-all revenue requirements the users of these articles may now be asked to pay additional taxes. The list of these excises is limited by the difficulty of finding commodities consumed in sufficient quantities to bring in revenue commensurate with the expense of administration."

Sullivan made no suggestion for new taxes on lubricating oils, or other petroleum and products and pipeline transportation, although he said, "undoubtedly, the Ways and Means committee will want to consider the possibility of adding other commodities to the list."

Special statements made by Sullivan in justification of proposed excise tax increases were limited to new levies proposed on tobacco products and liquor.

BULLETIN

OTTAWA, April 29. — Announcement of a 3c per gal. federal tax on gasoline, effective immediately, was made by Canadian Minister of Finance Ilsley in his budget speech here late today.

* * *

Gasoline Tax Hike Hit by A.T.A. Head

WASHINGTON, April 28.— House Ways and Means Committee today was warned that 1c per gal. increase in federal gasoline tax proposed by Treasury Department will tend to defeat its purpose as revenue raiser since gasoline used in trucks will be taxed to point of diminishing returns.

Warning came from John V.

(*Continued on page 6*)

Marketers Face State Tax Problems In Supplying Fuel for Defense Work

N. P. N. News Bureau

NEW YORK, April 28.—Divergence of opinion regarding application of state gasoline taxes to contractors operating on a cost-plus-fixed-fee basis for the federal government, especially now that defense contracts are being let in great numbers, has created a problem for oil marketers who supply gasoline and other taxable fuels to contractors working on such federal projects. Recent changes in opinions held by some of the various states have added to the confusion.

While the Treasury Department, office of commissioner of internal revenue, has held that no tax imposed under Chapter 29 of the Internal Revenue Code shall be applied to the sale of any article for use by contractors working on federal cost-plus-fixed-fee contracts, approximately half of the 48 states contend that their state gasoline taxes are applicable on sales to these contractors.

Guy G. Helvering, U. S. commissioner of internal revenue, in a letter to Rear Admiral B. Morrell, points out that under the cost-plus contract system, contractors bill the federal government for all costs plus a fixed, predetermined fee.

"It is the opinion of this office that such eqpipment, materials, articles and supplies are furnished for the exclusive use of the United States . . ." he stated, adding, "as the contractors are paid or reimbursed by the government for the actual cost of such articles, the evidence required by this office to support such exempt sales to the United States government is tax exemption certificate

(*Continued on page 6*)

Illinois Basin Crude Advance Hits New High

N. P. N. News Bureau

CLEVELAND, April 29— Prices for crude oil in the Illinois Basin field hit a new high of $1.27 per bbl. on April 28 with increased postings announced by The Ohio Oil Co. and Sohio Corp., the latter a crude purchasing subsidiary of Standard Oil Co. of Ohio.

Today, The Texas Co. and Gulf Oil Corp. met the 5c advances by Ohio Oil and Sohio, making their postings retroactive to April 28.

Ohio Oil also advanced its posting for Eastern Illinois and Western Indiana oil 5c to $1.12 per bbl., effective April 28.

See Greater Demand

TULSA, April 29—Advance of 5c per bbl. in Illinois crude prices was attributed by observers here today to "increasing demand for a diminishing product".

Great Lakes transportation has opened up and exports to Canada, coupled with increased demand from eastern states and Michigan refiners, has resulted in keen competition for Illinois oil, it was pointed out. Production in Illinois in the week ended April 26 averaged 327,150 bbls. daily, as compared with 438,200 bbls. daily in the week ended April 27, 1940.

Some observers said they believed the 5c advance discounts a part of the transportation advantage now held by Illinois producers over producers in the Mid-Continent.

Carter Oil Co. announced today that, effective April 28, it advanced its posted price for Loudon, Ill. crude 5c, to $1.27 per bbl.

D. J. Advances Filing Date For Oil Suit Defendants

N. P. N. News Bureau

WASHINGTON, April 29— Justice Department reports District of Columbia Federal District Court as having postponed until June 2 date when defendants must file answers in oil anti-trust suit involving American Petroleum Institute, Ethyl Gasoline Corp., 22 major oil companies and their alleged affiliates.

Marketers Face Tax Problem On Defense Gasoline Sales

(*Continued from page 5*)

Standard Form No. 1094, the use of which is authorized by General Regulations No. 86, issued June 19, 1936, by the office of the Comptroller General of the United States."

Iowa Withholds Tax

Attorney General of Iowa, in a recent change of opinion, has held that Iowa's gasoline tax will not apply to contractors working under cost-plus-fixed-fee contracts with the federal government. Letter from Attorney General's office to State Treasurer Bagley, dated April 7, reversed stand taken in previous correspondence under date of Sept. 12, 1940.

Reversals of opinions were also reported in Delaware and Mississippi. Delaware at first declared she would honor all government certificates, under specific conditions, but later repealed this ruling and instructed all distributors to collect the 4c per gal. tax, declaring such cost-plus contractors to be independent rather than agents of the federal government. Mississippi held likewise, reversing a previous decision.

States Listed

Those states which will accept Form 1094 in lieu of state gasoline tax on sales to cost-plus-fixed-fee contractors are: Colorado, Georgia, Idaho, Kansas, Michigan, Nevada, Ohio, Oregon, Pennsylvania, South Dakota and Wisconsin (on purchases of more than $500).

States which refuse Form 1094 are: Alabama, Arizona, Arkansas, Connecticut, Delaware, District of Columbia, Florida, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Missouri, Nebraska, New Hampshire, New Jersey, New York, Rhode Island, Utah, Virginia, West Virginia and Washington.

Further inquiries are reported under way in California, Louisiana, Montana, New Mexico, North Carolina, North Dakota, Oklahoma, South Carolina, Tennessee, Texas, Vermont and Wyoming.

2nd Region Army-Navy 'Gas' Demands Up 1874% in July-September Quarter

N. P. N. News Bureau

WASHINGTON, April 23.—Treasury Procurement Division bid invitation today estimated second region Army and Navy stations demand during July-September quarter for tank car gasoline (regular grade) at 14,451,345 gals., an increase of 1874% over 732,066 gals. last year. Stations also plan to increase purchase of tank car gasoline (premium grade) by 802% from 300,000 gals. to 2,705,863 gals.

Regular grade gallonages by posts for this year, together with those for last year (shown in brackets when any was purchased), follow: Brookley Field, Ala., 20,000; Fort McClellan, Ala., 510,000; Maxwell Field, Ala., 50,000 (57,250); Quartermaster, Selma, Ala., 30,000; Camp Joseph T. Robinson, Ark., 1,364,000; U. S. Naval Air Station, Jacksonville, Fla., 25,000; U. S. Naval Air Station, Miami, Fla., 23,000; Fort Barrancas, Fla., 9,265 (7,000); Camp Blanding, Fla., 1,500,000; MacDill Field, Tampa, Fla., 125,000; Quartermaster, Orlando, Fla., 27,000; Constructing Quartermaster, Tampa, Fla., 100,000; Fort Benning, Ga.: 1,464,000 (210,000); Fort McPherson, Ga., 22,250 (15,116); Fort Oglethorpe, Ga., 75,000 (70,700); Quartermaster, Savannah, Ga., 75,000; Camp Stewart, Ga., 663,000; Fort Knox, Ky., none (9,000); Fort Thomas, Ky., 15,000; Barksdale Field, La., 90,000 (125,000); Camp Beauregard, La., 215,000 Camp Claiborne, La., 500,000; Camp Livingston, La., 750,500; Camp Shelby, Miss., 100,000; Fort Bragg, N. C., 5,452,000 (132,000); Camp Davis, N. C., 454,830; Ordnance, North Charleston, S. C., 6,000 (6,000); Quartermaster, Calumbia, S. C., 750,000; Camp Forrest, Tenn., 175,500.

Similar comparison of estimated premium grade gallonages follows: Fort Benning, Ga., 829,000; Fort Knox, Ky., 1,336,359 (300,000); Camp Claiborne, La., 15,504; Camp Polk, La., 500,000; Camp Livingston, La., 25,000.

War Department Contracts For 100-Octane Fuel

N. P. N. News Bureau

WASHINGTON, April 28.—War Department today made public awards of contracts for delivery of 100-octane aviation gasoline at following points:

Ponce, Puerto Rico, 1,000 000 gals., Shell Oil Co. (Puerto Rico) Ltd., 18.5c per gal.; Jacksonville, Fla. municipal airport, 100,000 gals., Standard Oil Co., Ky., 15.08c per gal.; Salinas, Cal. municipal airport, 75,000 gals., Standard Oil Co., Cal., 17.5c per gal.; Harrisburg, Pa. municipal airport, 20,000 gals., Standard Oil Co., Pa., 19.17c per gal.

NPN 'Joins' The Army To View Oil Markets

N. P. N. News Bureau

CLEVELAND, April 29.—How U. S. defense program is affecting oil marketing around the Army's largest post in North Carolina, eight miles from Fayetteville, will be described in the May 7th NPN. Pictures of oil marketing equipment and construction plans in this area are part of this story, the ninth in NPN's oil marketing defense series.

This week's oil marketing defense story is about Virginia's Roanoke-Radford area and begins on page 19 of this issue.

Locale of other defense stories published the past 2 months by NPN with the dates are: Charlestown, Ind., Louisville, Ky., area, March 5; Cleveland, Ohio, March 19; Ravenna, Ohio, March 26; Detroit, April 2; Canton, Ohio, April 9; Hampton Roads and Norfolk, Va., April 16 and Joliet, Ill., April 23.

Wage-Hour Amendments Requested by Jobbers

WASHINGTON, April 28—Petition of South Carolina Jobbers Assn. proposing three amendments to the Wage-Hour Act has been filed with House by Rep. Fulmer, S. C., and referred to Labor Committee.

Amendments would limit period in which employes can claim overtime wages to 1 year; clarify interstate business operations subject to law, and provide that no penalty judgment or attorney's fee may be requested by an employe for back wages or overtime employment when it is shown to court's satisfaction that employer acted in good faith and upon advice of competent counsel in conducting his business.

U. S. Tanker Contract Is 100% Federal Deal

N. P. N. News Bureau

WASHINGTON, April 28.—Government's contract for 72 tankers with Sun Shipbuilding & Drydock Co. is a 100% government deal, reports Maritime Commission. (See NPN, April 23, p. 17).

Not involving any oil companies, Commission states that approximate cost of building these tankers will be around $180,000,000 and that construction will be completed in 2 years. Tankers are to be built with lease-lend funds, but Commission was unable to state whether they will be turned over to Great Britain, Navy or oil companies.

Gasoline Tax Hike Hit by A.T.A. Head

(*Continued from page 5*)

Lawrence, general manager, American Trucking Assn., who appeared as first witness at public hearings on pending $3,600,000 000 tax bill.

One cent tax increase will impose a levy of $271.43 on each truck of a fleet operating along Atlantic seaboard, Lawrence told committee. Average yearly mileage per truck in this fleet is 114,000, and while high, is not unusual, he said.

Tax of $190 per Truck

Another fleet operating over shorter distances in same region will have to pay an average increased tax per truck of $190, Lawrence said, going on to state that the for-hire branch of the trucking industry operates under Interstate Commerce or state commissions and it is therefore difficult to secure rate increases.

Situation in trucking industry is one of rising costs of operation and shrinking net revenues, Lawrence stated, adding that proposed gasoline tax increase of 1c will place further special taxes on one form of transportation which are not imposed on other forms.

Lawrence, early in his testimony, had emphasized to Ways and Means Committee that federal gasoline excises are not considered as taxes on motor vehicles to be applied against highway costs, but in fact are taxes paid into federal treasury and treated in same way as income and other business taxes.

Defense Highway Program Launched in Delaware

CLEVELAND, April 28.—State Highway Commission of Delaware has authorized acceptance of bids for a $1,462,000 highway construction program, $780,000 of which will be Federal aid, National Highway Users Conference bulletin states. First projects will be reconstruction of Concord Pike to meet Federal requirements in connection with highway defense plan, bulletin adds.

Texas Recycling Plant Nears Completion

DALLAS, April 28.—Expansion program at the Hunt Oil Co.'s Long Lake recycling plant is to be completed within the next few days, it was learned here today, enabling the plant to turn out about 17,000 gals. of butane daily.

In addition to the butane, the plant will manufacture about 45,000 gals. of motor fuel, reportedly sold in tank car lots under monthly contract.

Oil Industry Wage Survey Shows Widespread 5c Hike

N. P. N. News Bureau

TULSA, April 28.—Literally thousands of oil company employes walked away from paymasters' windows with fatter pay envelopes this past month.

According to a survey made by one group connected with the oil industry, pay increases in most instances averaged about 5%, generally applying to employes who have not received increases since Jan. 1, 1941, and in most cases to those drawing $250 or less monthly.

This survey, it was said, indicates oil workers at many southwestern U. S. refineries participated in the pay increase and that the hike was made retroactive to April 1 and 15 and in some cases takes effect May 1.

Phillips, Lion Hike Pay

Phillips Petroleum Co. announced a general 5% hike for employes drawing $250 a month or less and who had not received previous increases this year.

Lion Oil Refining Co., El Dorado, Ark., announced an hourly wage increase of 5c to all employes whose wages are based on an hourly rate and an increase of 5% in salaries of employes working on a monthly rate basis. Exceptions are commission employes and those earning $200 or more a month. Announcement was made by Col. T. H. Barton, Lion's president.

Wages Up in Middle-West

N. P. N. News Bureau

CHICAGO, April 28.—Refinery workers in the Middle-West were granted a 5c increase in hourly rates, during the past month by 5 major oil companies:

Socony-Vacuum Oil Co., Inc., 5c an hour on April 1 to all refinery employes; Standard Oil Co. (Indiana), 5c an hour at refineries, April 1; Pure Oil Co., an adjustment to refinery workers in March; Sinclair Oil Co., 5c an hour April 1 to all refinery employes at East Chicago; The Texas Co., April 1, 5c in hourly rates; salaried employes received individual consideration.

Another Mid-Western refiner indicated a 5c an hour increase for all hourly workers and 5% increase to all employes on a monthly salary basis.

In some cases where the Oil Workers International Union asked a hourly wage increase of 10c, most companies agreed to a 5c an hour raise, states B. R. Roberts, secretary, Local 210. This increase, reportedly, brought general common labor rate to 8c an hour and pumpmen, stillmen and treaters to $1.36½ an hour. Average hourly rate at some refineries in the Mid-West range from 97c to 99c, according to Roberts.

CLEVELAND, April 29. — Quaker State Oil Refining Co. has announced a 5c per hour overall increase to refinery workers at its plants at Oil City, and Emlenton, Pa., and Farmers Valley and St. Mary's, W. Va. Increase will affect approximately 800 workers, and will be effective May 1, a company official said.

Special to N. P. N.

TORONTO, April 28.—Effective March 1, all employes of Imperial Oil, Ltd., and its subsidiaries, are receiving a "cost-of-living bonus" payable without regard to basic salary or wage rates. For salaries employes it is $2.40 a week, and for wage earners 6c an hour for regular working hours. It will cost the company approximately $1,000,000 a year, it was reported.

Compact Invitation Still Eyed by Ickes

N. P. N. News Bureau

WASHINGTON, April 23.—Interior Department said today that Secretary Ickes is still holding in abeyance the invitation of Interstate Oil Compact Commission to appoint federal non-voting representatives to participate in Commission's proceedings until he sees what Congress does about extending Compact, which expires this year.

Widespread Washington impression is that Interior Department would not be displeased if Congress conditioned approval of Compact's extension for another 2 years upon federal voting representation on Commission, particularly if Cole Committee in its final report, due May 1, fails to find federal oil control necessary to national defense.

Some observers, however, question whether Congress would condition Compact, arguing this could render it ineffective since many state legislatures will not meet in regular session until 1943; also, whether Congress has authority under Constitution to approve conditionally an interstate compact.

Milky Bovines Excel Oily Barrels In New York's 'Black Gold' County

N. P. N. News Bureau

NEW YORK, April 28.—Bolivar, N. Y., is a reg'lar bonanza of bovine broth, with milk flowing, besides the usual places, from oil wells and pipelines if one is to believe the Works Progress Administration (WPA) writers project which, in a booklet entitled "New York, a Key to the Empire State", asserts that this city cushioned deep in the Allegany County oil fields is a great dairy center, with petroleum only a "sideline".

With a daily average yield of 8417 bbls. of Pennsylvania grade crude, Allegany County is the biggest boom-section of oil in the whole of New York state. But, according to the WPA writers, the local milk farmers, after stripping a few dozen udders, hitch up their donkey engines and stack up a pool of oil in their spare time. After the milk is cooled and separated (a topping operation), these same farmers hike out to the pasture and bring in the crude which they ship to refineries—still a sideline. Instead of men working on derricks, readers of the WPA booklet are led to believe they work at the churn, and that the focal point of interest is the dairy. Bulls are pictured as meaning more than barrels.

Crude oil is Allegany County's most lucrative industry. It yields in a single week a daily income of $19,259.

Turkish Government Now Controls Oil

N. P. N. News Bureau

WASHINGTON, April 28.—Commerce Department reports Turkish government as having established system of "federal oil control," to insure adequate supplies for public use and national defense.

Official government decree has established petroleum office in Turkish ministry of commerce which has power to buy and sell petroleum and derivatives required for need of public and national defense services, make imports from foreign countries, establish necessary stocks in various parts of Turkey, and to construct, purchase, rent, and in case of "need," sell all means of transportation, tanks and containers required for storage and shipment of petroleum.

Defense Plans Hike Car Registrations

N. P. N. News Bureau

CLEVELAND, April 29.—Effect of Uncle Sam's defense program on new passenger car purchases is seen from car registrations in states where munitions plants and other military projects are under way.

While February new car registrations for the U. S. as a whole were 33% above last year, registrations in states where huge projects are building have risen from 50 to over 100%.

In Virginia, new car registrations in February were 101% above February, 1940. In this state, a $44,000,000 smokeless powder plant and a $14,000,000 powder bag loading plant are being constructed, in addition to a $14,000,000 expansion at the Newport News Shipbuilding Co. (See page 19, this issue).

New car registrations in Alabama, where a $58,135,000 program including a shell forging and a smokeless powder plant are being built, were 62% higher in February this year. Washington registrations show a 79% increase, spurred by a $16,068,849 program.

Other states where gains in registrations are above the U. S. average are: California, 49%; Louisiana, 57%; Maryland, 41%; Massachusetts, 53%; Michigan, 43%; Mississippi, 49%; Missouri, 44%; Nebraska, 50%; and Rhode Island, 86%.

Socony Enlarges Plans To Prevent Sabotage

N. P. N. News Bureau

NEW YORK, April 28.—With Socony-Vacuum Oil Co.'s program for preventing sabotage under way, Socony reports that an additional $345,000 will be spent each year for "capital improvements, such as floodlights and fences", and additional watchmen at key plants.

Report of the sabotage prevention program, contained in the April "Socony-Vacuum News", states that enthusiastic support of employes has been received. Acknowledging that employes are naturally interested to know whether or not there have been any actual cases of sabotage within the company, report states that "some incidents of a highly questionable and unusual character have occurred.

"There is, however, no definite proof that they were sabotage. Fortunately, their consequences were not serious, but they indicate the necessity for our continued alertness."

California Production Costs To Be Studied by Committee

N. P. N. News Bureau

LOS ANGELES, April 28—Revisions of crude oil and gasoline prices by Standard Oil Co. of California, April 24, restored the basic price of 27 gravity Signal Hill crude to approximately the level it held for 4 years prior to Feb. 1, 1940, but did not make a corresponding restoration of gasoline prices.

Although the upward revision of crude prices has been welcomed by oil producers, particularly in the fields chiefly benefitted, it has not been accepted as a solution of the operators' problems. Advances in postings for heavy oils—roughly from gravities 17 to 25—ranged from 8 to 13c per bbl. So far as the San Joaquin Valley fields are concerned, the advances were in addition to increases of about 5c per bbl. made on March 12.

Object to Change

Producers in these heavy oil fields were generally considered responsible for the defeat of the proposed increased percentage of the state quota assigned to wells producing heavy oils. Their objection appeared to be based on the belief that any change in the present satisfactory uniform program was undesirable and that, instead, a considerable advance in crude prices was necessary. They contended that only such advances could justify continued production of heavy oils from present wells, the reconditioning of wells that have ceased to produce, and the drilling of new wells in the old areas.

Lawrence Vander Leck, newly-elected president of the Oil Producers Agency, acting for this group, has appointed a special committee from the Agency's membership to investigate operating costs in California oil fields as preparation for an authoritative survey of the producer's current economic position.

Members of the inquiry committee include Ralph B. Lloyd, Lloyd Corp., chairman; L. L. Aubert, Bankline Oil Co.; C. C. Spicer, Republic Petroleum Co.; Dana Hogan, Hogan Petroleum Co.; C. A. Johnson, Holly Development Co.; and Lloyd Williamson, California Star Oil Co.

Fight 'Losing Battle'

"On Feb. 1, 1940, the Standard Oil Co. of California sharply reduced the posted price for crude at the well, and California producers, especially those with heavy oil, have been fighting a losing economic battle ever since," Mr. Vander Leck said. "Every cost factor in the business has moved steadily upward, and the present increase in the posted price is wholly inadequate to meet those rising costs, and further adjustments upward are imperative."

Mr. Vander Leck supported his contention by quoting data submitted to the April 14 joint meeting of the Interstate Oil Compact Commission and the Cole Congressional Committee in New Orleans, which he attended as an observer from California. Department of Labor index statistics presented there, he said, showed that the 1935-1937 base index on 10 principal products used by the oil industry in its operations now stands at 111. The same index showed that prices for petroleum products have declined until the petroleum index is now just over 88.

Presents 'Serious Problem'

"The increase of 11 points in prices paid by the oil producer for his principal purchases," Mr. Vander Leck said, "together with a decrease of over 11 points in the price received for oil products, has presented a serious problem for the petroleum industry."

"The consuming public has had the advantage of extremely low prices which have prevailed on petroleum products, prices totally out of line with prices obtaining on all other basic commodities," he pointed out, "but the producer cannot efficiently operate his properties, continue remedial work on his wells, constantly employ labor and maintain a steady exploration and development program for new sources of petroleum, unless he obtains a return for his product which will permit him to meet these steadily increasing costs of doing business."

Marketing Officials Wait

Comment within the industry in regard to the increase of 0.5c per gal. on wholesale and retail prices of gasoline has been less in evidence than on the crude situation. Marketing officials preferred to wait until the situation had clarified before expressing any opinion as to future developments.

Officials pointed, however, to the fact that the current increase restored only about one quarter of the reduction made in May, 1940, while crude prices had been restored to about their old level. Economically, they thought this indicated further advances in gasoline prices were justified.

PRICES

Ohio Gasoline

N. P. N. News Bureau

CLEVELAND, April 29.—Standard Oil Co. of Ohio has announced advance in its prices for Sohio X-70 gasoline (regular) at Marietta, O., effective May 1, with re-seller price up 0.25c to 8.5c and retail up 0.5c to 11.5c, ex taxes. At same time, company's discount to all commercial consumer accounts will be cut from 2.75c, to 2.5c off posted consumer t.w. price of 11c.

Also effective May 1, Ohio Standard will revise its Akron Q.D.A. Comparison of new and old schedules follows: (Discounts are from posted consumer t.w. price of 11c).

Old	
0 to 999 gals.	2.5c
1000 gals. or over	3.0c
New	
0 to 999 gals	2.0c
1000 to 4999 gals.	2.5c
5000 gals. or over	3.0c

* * *

Indiana-Illinois Gasoline

CHICAGO, April 29.—Standard Oil Co. (Indiana) today issued the following announcement:

"Effective May 1st, 1941, Standard Oil of Indiana will advance to within 1c of normal, all subnormal tank wagon prices to both consumer and dealer on all 3 grades of motor gasoline that are now more than 1c below normal throughout Illinois and Indiana, except in the Chicago metropolitan area."

* * *

Ohio Naphthas

CLEVELAND, April 28.—Standard Oil Co. of Ohio has announced a 0.25c advance to 9c in its tank car price for V. M. & P. naphtha, D. C. naphtha, Sohio Solvent and Varnoline, and a 0.25c reduction to 8c for S. R. Solvent, effective May 1. Prices are ex 5.5c taxes, delivered anywhere in Ohio.

* * *

New Jersey Kerosine

N. P. N. News Bureau

NEW YORK, April 25.—Standard Oil Co. of New Jersey has announced that effective April 23, its dealer tank wagon prices for "Esso" kerosine and No. 1 fuel oil were advanced 0.2c per gal. in New Jersey.

Oil Truck Tonnage Up

WASHINGTON, April 28.—Transporters of petroleum products, accounting for almost 9% of total tonnage reported, showed an increase of 8.2% in March over February, and an increase of 26.1% over March, 1940, American Trucking Assns. reported today.

Socony-Vacuum Corrects Fuel Oil 'Tops' Report

N. P. N. News Bureau

NEW YORK, April 28.—Socony-Vacuum Oil Co., Inc., today reported a correction in its previously announced fuel oil contract "top" prices, carried in NPN, April 23. Announcement follows:

"The previously reported top prices on No. 5 and No. 6 fuel oils announced in NPN, April 23, as set by Socony apply only to accounts contracted previous to April 18. As of that date, Socony eliminated contract top price postings for all classifications of accounts using No. 5 and No. 6 fuel oil. For all new business the open market spot price postings apply."

DEATHS

Robert D. Scott

Robert D. Scott, Louisville, 55, sales manager of Louisville Refining Co., died April 23 in Methodist Hospital, Indianapolis, following an automobile accident near Franklin, Ind.

Mr. Scott was elected a director of the Kentucky Petroleum Marketers Assn. at its last annual meeting. Prior to joining Louisville Refining Co., he was in the oil business in Lexington, his former home. He leaves a wife, Mrs. Elizabeth C. Scott, a daughter, Mrs. W. E. Oldham, and a son, Robert D. Scott, Jr. Burial was at Lexington Cemetery.

* * *

Harry Heasley

Harry Heasley, 77, chairman of the executive committee and director of the Devonian Oil Co., Tulsa, died at his home on April 19. Formerly president of the Oklahoma Natural Gas Co., Mr. Heasley had been in the oil and gas business for fifty years, operating in Pennsylvania, Oklahoma, and South American fields.

* * *

Luther D. Fulton

Luther D. Fulton, general superintendent of refineries for Pennzoil Co., died at his home in Titusville April 2. Mr. Fulton began his career with Pennzoil in 1901 following a number of years as an engineer, during which he traveled extensively in the U. S., Canada and South America. He was a well known refinery technician in the industry and held several patents on appliances used in refining. Mr. Fulton served for 4 years as mayor of Titusville, his native city.

THE EDITOR'S PAGE

Readers Comments and Opinions will be much Appreciated by—WARREN C. PLATT, Editor and Publisher, Penton Building, Cleveland, O.

Here's A Smile

Amidst all our troubles of war, cut prices, government regulation and not enough profits, try this item on your sense of humor. It was published the other Sunday by Cleveland's most reliable Plain Dealer.

In one of those stray paragraphs, without parentage and used for filler, the item said,—

"Buy your gas early"

"Best time to buy gas is before the sun comes up. Later in the day the sun causes the gasoline to expand and dawn buying may save you 5 gals. in 100."

That suggests that the following must be true,—

That the change in temperature of the sun from dawn to mid-day is at least 100° F. for, according to the oil industry's rough formula, volume changes 1% for every 20 deg. change in temperature. An increase of 5 gals. in 100 gals. is a change of 5%.

That the night time temperature is 100° below the mid-day temperature which, in the hot Southwest would bring the night down to 15° F. and in the North to 15° and 20° below zero most every summer night.

That the average motorist would buy his gasoline at dawn and then, presumably, push the tail of the car out in the sunlight and keep turning it around to the sun until the temperature of the gasoline was that of the atmosphere, and not use any in the meantime.

But maybe the sun does not stay hot enough to swell the gasoline 5%, especially as the "gas" tank is nowadays tucked down below the body of the car which body offers further hindrance to the transfer of the sun's heat.

Will some obliging technologist, while he may be watching a fish line bobber on a quiet summer's day, please figure the rest of this thing out?

If there is anything to it, the oil industry certainly should not withhold such a great dollar saving from its customers.

Simplify Price Quotations

The thanks of the oil industry are due the Petroleum Accountants Society of Oklahoma, and all others, for their present effort to cause the western oil industry to drop the hard-to-handle quarters and eighths of a cent for plain tenths or decimals, in pricing petroleum products per gallon.

This accountants society, after study of the problem, has made a recommendation to the industry and now it is engaged in trying to convert the industry to that recommendation. We wish it luck.

For years, the oil industry has struggled with about the hardest kind of figures to be found, quarters and eighths. These have to be converted to decimals finally in order to add on the freight rate and the result is a monstrosity that wears out computing machines at a far higher rate than is necessary.

We, of NPN and the OILGRAM, raised a protest last fall as the 'steenth computing machine fell to pieces while we prepared the averages and the average of the averages etc. etc. etc. ad infinitum (without end) for our 1940 OIL PRICE HANDBOOK.

As the Petroleum Accountants say in a notice to the industry, the decimals are being used quite a bit in the East and several large companies are using them in the West and our tank wagon prices are all in decimals, so all a refining company has to do now to save the world for decimals is just to start quoting tomorrow's prices in decimals.

Won't you please do so Mr. Sales Managers?

Coal Attacks Oil

As was expected, the coal interests have come out in the open at last in a demand on Congress for a 2c a gal. tax on fuel oil. Resolutions to such effect have been adopted by both the operators and the miners of hard coal, the miners of course being of the "CIO" John Lewis following.

Because of the readiness with which the soft coal operators acceded to the demands of "CIO" Lewis for $1 a day increase in miners' pay, the oil industry can undoubtedly expect the soft coal crowd will also support such a tax, when the present coal row is settled, as it undoubtedly will be in favor of the miners' getting the additional money.

Because Secretary of the Interior Ickes is boss of the country's coal commissioner and has full power to fix coal prices, the oil industry can also expect to hear from Brother Ickes again about some oil "conservation" regulation by him. Such "conservation" regulation, as in the past proposals, will have to include price raising powers and restrictions as to the use of fuel oil, else, as a result of all this maneuvering, the coal people will lose still more of their market.

The New Deal has been building up to this end with the recent reports of commissions and associates of various departments, that the oil industry be treated as a public utility.

Conservation in the public interest is one thing and that is being very well taken care of by the oil states, but "conservation" to make a market for coal and to permit the raising of prices of coal operators and wages to coal miners, is nothing but government socialism.

The oil industry can well view with considerable uneasiness the quickness with which the coal operators give way to the miners' wage demands and the activity of the government in support thereof. It can mean only one thing, that the government is going to try by government decree to take at least some of the market away from fuel oil and to tax it so heavily that oil cannot compete with coal.

We should know more of what is in store from government for the oil industry in a few weeks as the Cole Congressional Committee that has been investigating the oil industry and its conservation efforts, is about ready to report. Authentic report says that Chairman Cole is expected to continue his usual conservative position, that the oil industry does not need to be taken over by the federal government. We hope that is correct and that his opinion prevails.

At all events, the coal crowd is going to be hot after oil, with the New Deal pushing right along behind.

We Congratulate the Associations

The winter and spring season for oil industry association meetings is about over.

And now is the time to offer congratulations on the most successful season in industry history. All meetings were better attended than ever before, more oil men coming to register and more oil men attending the meetings.

The programs were better. The topics discussed bore more directly on the problems of the individual members and the speakers and authors of papers were better equipped and did a better job than ordinarily with those subjects.

Not enough is made of these meetings in our opinion, either by the industry generally or even by the association officers.

Speaking particularly of the jobber association meetings, it would seem that a series of subjects directly concerning the jobbers might be selected and a group of speakers arranged to travel from one jobbers' meeting to another and discuss those subjects. This would permit the speakers to go to greater pains in preparation knowing that they were to give the same talk to a dozen or a score of audiences, and it also would enable them to study and perfect the best way to present their subjects.

The new organization of State Oil Jobbers' Association Presidents has discussed the possibilities of co-operating in organizing such a traveling program with specially selected and well-qualified speakers. We hope it can work out this plan this summer and thus provide oil marketers with still better programs.

Oil association meetings are the best places to thrash out industry problems, as has been shown. The more intelligent the papers, the more productive the resultant discussions and thinking and doing should be.

Our congratulations to the officers and members of all these associations that are doing so much for the industry.

NPN's Log On Oil Legislation

Oil legislative information, summarized below, is based on reports deemed reliable although NATIONAL PETROLEUM NEWS assumes no responsibility for the accuracy or completeness of this information.

CONGRESS

Changed Status

S Res. 53, O'Mahoney, Wyo.
Senate Lands Committee investigation public lands mineral resources (including gas and oil). Reported to Senate.

BILLS INTRODUCED

California

S-1320, Wagy
Amends public resources code defining unreasonable waste of natural gas and making same unlawful. To Natural Resources Committee.

Florida

S-233, Kelly, et al
Provides for refund of tax on gasoline used in certain motor boats and tractors. To Finance and Taxation Committee.

H-419, Andrews, et al
Imposes gross receipts tax in addition to all other taxes on every person engaged in business in Florida. To Finance and Taxation Committee.

H-299, Wiseheart, et al
Concerns conservation of crude oil and natural gas; prohibits waste; requires notice of intention to drill, etc. to Judiciary Committee "A."

S-211, Hinely
Imposes excise tax on kerosine and other like products in addition to other taxes; levies license tax on dealers. To Finance and Taxation Committee.

Illinois

H-617, Dukes, et al
Licenses all retail stores; fee ranges from $25 for 1 store to $1000 for each store over 30. To Revenue Committee.

Michigan

S-330, Carpenter
Amends 1939 Acts so that one-fifth of severance tax shall go to county general fund, one-fifth to county road fund, and one-fifth to township and city where oil and gas is produced. To Taxation Committee.

HCR-39, Thomson & McKay
Permits Governor to enter into oil and gas agreements with other states in Oil Compact. To Rules Committee.

Oklahoma

H-524, Latting
Increases gasoline excise tax from 4c to 5c; extra 1c to go to general revenue fund with no exemptions.

Pennsylvania

HR-72, Holland
Urges appointment of commission to investigate cause of Allegany County gasoline price wars. To Rules Committee.

HR-51-Dalrymple
Extends Pennsylvania Turnpike from Irwin to Erie, Pa. To Highways Committee.

H-1351, Holland
Appropriates $25,000 for expense of commission to investigate Associated Petroleum Industries Committee.

Texas

H-942, Clark
Amends laws providing railroad commission shall limit production of crude petroleum in state to reasonable market demand. To Oil, Gas & Mining Committee.

Changed Status

Illinois

S-55, Laughlin
Continues 3% sales tax to July 1, 1942 reducing it to 1% thereafter. Tabled.

S-388, Benson, et al
Imposes tax of 3% on all oil produced in Illinois. Passed Senate.

Maine

H-1476, Littlefield
Same as H-1559. Imposes 1% general sales tax. Killed in House.

Oklahoma

H-477, Hughes
Authorizes State Board of Agriculture to lease college lands for oil and gas or to have same drilled under contract. Passed House.

Pennsylvania

H-1151, Woodside
Transfers $4,150,000 from motor license fund to general fund for deficiency appropriations for public assistance. Passed House.

Texas

S-34, Brownlee
Limits truck and bus speed to 40 m. p. h. on highways, 18 m. p. h. in towns. Tabled.

Approved

Maine

H-1479, Richardson
Imposes tax of 4c a gal. on motor fuels other than gasoline.

Oil Tax Proposals Offered in Florida

N. P. N. News Bureau

NEW YORK, April 28.—Florida again led the way in introducing new bills as the state legislature rounded out their fourth month in session with no new adjournments reported over the past week.

Orange State lawmakers turned once more to the field of taxation, proposing a gross receipts tax in addition to all other taxes on every person engaged in business within the state, an excise tax on kerosine and other like products in addition to other taxes, and at the same time levying a license tax on all dealers. These bills were all referred to the Committee on Finance and Taxation. Oklahoma also joined the tax parade with a proposal to increase the gasoline excise tax from 4c to 5c with a provision that the extra penny should be sent to the general revenue fund with no exemptions.

Conservation and unreasonable waste of natural gas and other petroleum resources were brought up in California and Oklahoma, the former amending the Public Resources Code which defines unreasonable waste and makes it unlawful, the latter concerning the prevention of waste of both crude oil and natural gas and requiring notice of intention to drill. Carrying this idea one step further, Texas introduced a measure to amend the laws providing Railroad Commission shall limit crude production to reasonable market demand.

One tax bill became law as the governor of Maine set his signature to Assemblyman Richardson's bill imposing a tax of 4c a gal. on motor fuel other than gasoline. No other measures were approved although several saw favorable action in their respective states.

Maine Kills 'Gas' Tax Hike

An Illinois proposal which imposes a tax of 3% on all oil produced in the state passed the senate while a Pennsylvania measure which would transfer $4,150,000 from motor license fund to general fund for deficiency appropriations for public assistance passed the House. After a lengthy fight, Maine House bill 1476 providing for the imposition of a 1% general sales tax was beaten down while the senate was busy reconsidering and defeating for the second time (by a vote of 16 to 14) the bill to increase the state gasoline tax by 0.5c.

Texas Senate Passes 8c Diesel Fuel Tax

Special to N. P. N.

AUSTIN, April 28—Texas Senate last week stuck a stiff penalty upon trucks with Diesel engines when it raised the tax on fuels for this type motor from 4 to 8c per gal. The increased tax was a Senate amendment to the House-approved omnibus tax bill.

Efforts some time ago in the Senate to put heavy registration fees on Diesel trucks were defeated during the debate on the truck load limit law, which was finally passed, raising the truck load limit from 7000 to 28,000 lbs. The bill has been signed by Gov. W. Lee O'Daniel.

A large per cent of the $23,000,000 to be raised in the omnibus bill comes from increased taxes on natural gas and crude oil.

Texas Senate 'Struggles' With Oil Tax Bill

Special to N. P. N.

AUSTIN, April 28.—Senate today was still struggling with Omnibus Tax Bill after defeating by one vote a net state income tax estimated to have raised $15,000,000 annually. After voting down income tax, however, Senate raised by 10% the levies in original bill, including those on oil and sulphur.

Reductions estimated at $200,000 annually on casinghead gas and $500,000 annually on carbon black were approved.

Indiana Standard's Gallonage Rises 5%

CHICAGO, April 24.—Gallonage for the first two months of this year increased 4 to 5%, but earnings of the Standard Oil Co. (Indiana) were somewhat lower than the corresponding period of last year (see NPN, April 16, p. 10), according to Edward G. Seubert, president.

This statement was made at a press conference here today preceding the annual stockholders meeting. Mr. Seubert attributed the decline in profit to the higher costs of operating.

Due to better transportation facilities many of the bulk plants operated by Indiana Standard, have been eliminated, he said.

In response to a question, Mr. Seubert said that the dealer marketing plan was running along smoothly, but that there was a good deal of competition along this line.

Dealers Lose Men

Commenting on the defense situation in regard to the oil industry, he said the industry was well prepared to meet any emergency demands for petroleum products. Mr. Seubert said that the Indiana Company's dealers were losing many of their men because of increased industrial activity and the draft, and that it was becoming difficult to replace them with good men. However, he reported that actual effect on the maintenance of the service stations had not been felt.

At the annual meeting held at Whiting, Indiana, stockholders approved the proposal to merge the Pan-American Southern Corp., a subsidiary of Standard Oil Co. of Indiana, with the parent company. Standard of Indiana owns more than 99% of the Pan-American Southern stock. Company operates through a marketing subsidiary in Tennessee, Mississippi, Alabama and Louisiana. Merger was put into effect to simplify corporate set-up and effect economies.

Eleven directors of the board were re-elected by the stockholders; they were Edward G. Seubert, president; Charles J. Barkdull, executive vice-president; Allan Jackson, vice-president; Amos Ball, vice-president in charge of sales; A. W. Peake, vice-president in charge of production; Louis L. Stephens, advisory counsel; Max G. Paulus, vice-president in charge of manufacturing; Harry F. Glair, general manager of manufacturing; Judson F. Stone; R. F. McConnell, general manager of sales; and Bruce K. Brown, general manager of research and developments.

Where can profit come from?

Because profit depends on selling your product for more than it costs to make it, therefore profit can come from either end, reduction in cost or increase in selling price

The refiner may have to sell at the buyer's price but his costs are in his own hands They depend on the processes he uses, and his operation

Refiners using Dubbscracking can thank their own good judgment for they have a big advantage

Low operating cost, top yield, and superquality products are notable characteristics of Universal processes

And Universal refining specialists are always ready to help every licensee to realize these benefits to the utmost

Many a Dubbs refiner today is saving in operating cost by availing himself of their friendly and effective help

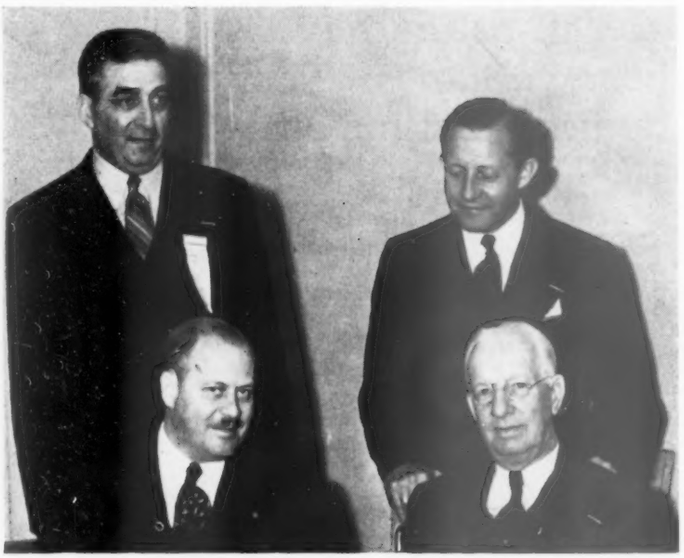
Can you save a profit?

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

Ohio, New Jersey, Texas Associations Discuss Oil Problems

Gathering for a few minutes conversation at the close of the final session of National Petroleum Assn.'s mid-year meeting at Cleveland are, left to right: N. H. Weber, Pure Oil Co. and N.P.A.'s president; Fayette B. Dow, N.P.A.'s general counsel; Otto Koch, Kendall Refining Co. and N.P.A. trustee; C. L. Suhr, Pennzoil Co. and N.P.A.'s executive vice-president; and H. T. Ashton, Lubrite division manager, Socony-Vacuum Oil Co., Inc.



New Jersey fuel oil officers are, left to right, seated, Ernest Studerus, president; F. C. Conkey, vice-president; standing, A. W. Rich, executive secretary and Walter Hanisch, treasurer. Stewart Craig, the new secretary was not present when this picture was taken

Frank W. Lovejoy, left, spoke on oil's part in national defense preparations while Dr. R. T. Goodwin told the New Jersey fuel oil group about his impressions of war-torn England, having just returned from a clipper trip to the British Isles

Natural Gasoline Assn. of America late last week conferred upon Ray E. Miller of Tulsa, former secretary-treasurer of the association, the presidency for 1941. *Shown here, left to right are new officers of N.G.A.A. and 2 former presidents: H. A. Ells, Bartlesville, Cities Service Oil Co., vice-president; H. H. Beeson, Shreveport, Sabine Valley Gasoline Co., Inc., vice-president; Mr. Miller, Hanlon-Buchanan, Inc.; George P. Bunn, Bartlesville, Phillips Petroleum Co., retiring president; William F. Lowe, N.G.A.A. secretary; S. S. Smith, New York City, Shell Oil Co., Inc., past president; J. W. Vaiden, Tulsa, Skelly Oil Co., vice-president; J. R. Jarvis, Dallas, Lone Star Gasoline Co., vice-president*

WITH THE ASSOCIATIONS

Defense Subjects Highlight NPA's 38th Annual Meeting

N. P. N. News Bureau

CLEVELAND, April 28.—Unless we get into a "shooting" war, it appears at the moment that chances are against government control of the oil industry, N. H. Weber, president, told 38th semi-annual meeting of National Petroleum Assn. here last week.

Although President Roosevelt, under the Lease-Lend Act, would have power to take control in the event of actual hostilities between the U. S. and any foreign nation, there are some in Washington who seek government control "to aid defense and prevent waste," Mr. Weber said, adding that events of the past few years clearly show that people generally "have been brought to think the oil industry is a menace and must be controlled."

Scores TNEC Reports

The N.P.A. president scored reports on the oil industry now being filed with the Temporary National Economic Committee as "so theoretical and biased that department heads, as well as committee members, hasten to disclaim responsibility for them."

Citing the oil industry's record during the first World War, Mr. Weber stated that it is again capable of "genuinely patriotic leadership." He said he hoped the government would call upon it for voluntary leadership, but that if the government insists on "statutory" methods, "I hope that the industry will think its freedom important enough to fight for," he declared.

Discuss Engine Test

Mr. Weber's address on April 24 opened general sessions at the 3-day N.P.A. meeting. April 23, given over to group meetings, scheduled a symposium on engine testing; a round table on transportation led by M. J. Gormley, executive assistant, Assn. of American Railroads; meeting of American Petroleum Institute's Lubrication Committee and Western Pennsylvania Refiners Traffic Assn.

Need for a standard engine test for evaluating motor oils and engine conditions after tests of lubricants have been made was emphasized during the symposium on engine testing in which authorities from both oil and automotive industries participated. Papers were presented by the following: L. A. Blanc, Caterpillar Tractor Co.; C. W. Georgi, Quaker State Oil Refining Corp.; Hugh Hemmingway, Kendall Refining Co.; Joseph A. Moller, The Pure Oil Co.; H. C. Mougey, General Motors Corp.; and A. O. Willey, The Lubrizol Co. Full report on the engine test symposium will be carried in NPN's Refining Technology edition, May 14.

Need Quality Lubes

Duty of lubricating oil manufacturers is not to increase quantity, but to strive to produce motor oils which will guarantee satisfactory operation of every piece of motorized equipment in the armed forces of the U. S., P. M. Robinson, assistant to the consultant, petroleum unit, Office of Production Management, said in opening general sessions April 25.

Mr. Robinson stated there is ample production of lubricating oil to meet all Army and Navy needs. He pointed out that increased demand of Army and Navy for coming year is not much over half of total increase in lubricating oil production in 1940 over 1939. Mr. Robinson disclosed that there is considerable agitation among Army divisions and branches for a complete revision and simplification of all specifications for lubricating oils used by the Army. A committee recently has been appointed and authorized to survey the whole situation and to make recommendations on this subject, he said, adding that oils meeting specifications of this committee will be mandatory for use by all branches of the service.

Divide Lube Contract

That the Navy contract for lubricating oils in the coming year may be broken down into states instead of covering all bids in one overall contract, was reported by the OPM assistant. The Navy contract ordinarily takes in all purchases of lubricating oils used by all U. S. government departments and branches throughout the continental U. S., Panama Canal and Hawaiian Islands, except Army Air Corps and special Diesel engine oils. (See page 36 of this issue for text of Mr. Robinson's paper.)

In his paper, "Petroleum in Two World Wars", E. L. DeGolyer, DeGolyer, MacNaughton, & McGhee, outlined the position of the oil industry with regard to supplying war demands. As far as the Axis powers are concerned, Mr. DeGolyer said, "obviously, the German position is not too easy, but there has been no evidence of shortage in petroleum products. Possibly, with the continuance of the war, German stocks may be depleted and her position may become somewhat more difficult." Lubricating oils and high octane gasoline were given by Mr. DeGolyer as Germany's chief problem.

Italy Feels Shortage

Italy, on the other hand, being almost entirely dependent upon imports, has felt an acute shortage of petroleum products. Much of the difficulty the Italians have encountered in both naval and military operations has undoubtedly been due to an oil shortage, he said.

N.P.A. sessions closed with a talk by Joseph C. Rouensky, office of the co-ordinator of commercial and cultural relations between the American republics, preceded by Brinley Thomas, McGill University, Montreal, who outlined "Britain's Battle". Mr. Rouensky substituted for Nelson A. Rockefeller, who did not attend because of illness.

Recycling and 'Bottle Gas' Discussed at NGAA Meeting

By NPN Staff Writer

DALLAS, Tex., April 28.—Natural Gasoline Assn. of America, in 20th annual session here last week, recognized as newcomers in the natural gasoline industry the liquefied petroleum gas and recycling divisions.

The liquefied petroleum gas industry was described by N. G. A. A. President George P. Bunn, Phillips Petroleum Co., as "only one of the phases of the new era for natural gas products, an era in which we may find the use of natural gasoline in motor fuel blends only one of a number of important outlets."

And forced by the very close economies requisite for production of condensate wells has come an "almost ideal method of producing oil and gas—the original practice of recycling," he said.

Hits 'Misguided' Taxes

But with the development of each of these 2 newcomer industries has come a multitude of problems pertaining to operation and economics.

For Texas, the N. G. A. A. president painted a gloomy future should legislation now being considered pass in the state legislature. Texas' production of natural gasoline, which now figures about one-third of the country's total output, may shrink to one-tenth of this amount by July 1 this year, the president said, if "misguided taxation of natural resources" is passed.

Widening his remarks to include the national situation, President Bunn said: "There is a pronounced effort indicated in federal circles and petitioned quite publicly by many coal interests to restrict further production of natural gas and gas products, thus denying the advantages of these preferred fuels to the industrial and domestic users of the U. S."

Recycling Growth Cited

"It is even insinuated that national defense will be jeopardized if this be not done," he continued. Resistance to this effort of competing interests and appeal to "our statesmen to disillusion them speedily," was advocated.

Growth of recycling—to its present output of some 25,000 bbls. daily—presages "production in a few years of perhaps several hundred thousand bbls. of almost-motor-fuel quality condensates," he continued.

"This prospect, influencing

the controlled production of crude in an amount equal to more than twice the distillate or condensate recovery effected because of its near-gasoline quality, is alarming proration experts and regulatory bodies." he said, bringing up the question of whether or not recycling operations should be controlled and if so, how much.

Could Meet All Needs

Last year, the natural gasoline industry could have met all the motor fuel requirements of the country, the president declared, adding that "not one bbl. of crude would have been necessary had all the natural gasoline yielded . . . its potentially available liquid fuels."

Everything points to new and revolutionary discoveries and undertakings in the future, the president said, and "as we see the former utility of natural gasoline, based on its inherently superior qualities, depressed by the advances in motor fuel technology and adaptations, we ourselves, must conceive and make the moves vital to sustenance."

It was on these operating and economic problems confronting the natural gosaline and kindred industries that the association's 20th annual meeting was grounded.

Cautions Against Control

After describing the adequacy of the natural gasoline industry in national defense, Elmer F. Schmidt of Dallas, Lone Star Gas Co., cautioned that in these times of emergency the oil industry is on trial. "If defense needs and requirements are not anticipated and adequately taken care of by private enterprise, government will take over . . . and when government steps into our industries, we approach the dictatorship form of government where free enterprise and individual initiative cease to exist."

Growth of natural gasoline industry has made available increased amounts of by-product natural gasoline which has been marketed as fuel and source of energy and more recently as a chemical raw material from which many useful products may be manufactured. With this summary, Frank H. Dotterweich, Kingsville, Tex., Texas A. & I. College, elaborated upon the "Useful Products from Natural Gas."

Cites By-Product Uses

These products include svnthetic rubber, plastics, 100 plus octane fuel and many chemical raw materials, Mr. Dotterweich said Sure to play an important part in the future development of our country, these products are expected to be used in the construction of equipment for armed forces and may be used in consumer products to replace strategic metals necessary in other fields. Upon the industry's ability to discover, recover and supply these raw materials rests the responsibility of furnishing increasing amounts of essential raw materials, the college professor said.

Three of the technical papers presented touched upon "at-the-well" problems and research work accomplished toward their solution.

Reports On New Test

A summary of a full year's work in the revision of the old charcoal testing code used in determining the natural gasoline content of natural gas was reported upon by H. L. Oder, Bartlesville, Cities Service Oil Co. Tentatively adopted, the new code will give more duplicable results than the previous method, since some optional features have been eliminated and tolerances reduced. Work of the N. G. A. A. Gas Testing Committee this year will include a study of methods used in determining gasoline content and specific gravity of gases under high pressure and the obtaining of representative samples of these gases.

With the advent of recycling and the measurement of high pressure gas special problems have developed concerning the check of plant gas measurement. Speaking on "Making Gas Measurement Balance in a Cycling Plant," D. A. Sillers, Lone Star Gas Co., sketched how field and office problems were met in obtaining a check on gas flow within 1%. This discussion included meter installation problems encountered in the flow of gas from the wells, through the plant, and back into the input wells.

Dehydration Discussed

Of interest at the technical session was a discussion by R. A. Carter of Continental Oil Co. on "Dehydration in High Pressure Gas Operations as Applied to Repressuring and Pressure Maintenance," since most literature covers formation and disposition of hydrates in the operation of large commercial gas lines.

In summarizing activities of the association's technical committee, H. H. Beeson, Sabine Valley Gasoline Co., Inc., told of attempts to find the true density values for some pure hydrocarbons, the development of a hydrometer method for obtaining specific gravity of liquefied petroleum gas and the development of a new table of physical constants for paraffin hydrocarbons.

Other technical papers had to do with discussions of "Low Temperature Fractional Analysis, Apparatus and Procedure," by H. A. Montgomery and C. E. Wharton of Hanlon-Buchanan, Inc.; "Compressor Losses Caused by Orifice Meters," by J. G. Burnham and V. E. Middlebrook of Shell Oil Co., Inc., "The Magnitude of Variables Affecting Accurate Reid Vapor Petroleum Gas Industry," by F. M. Allen of Indian Territory Illuminating Oil Co., and "Safety Standards of the Liquefied Petroleum Gas Industry,' by G. L. Brennan of Phillips Petroleum Co.

Isomer Growth Told

Developments of markets for isomers, which occur in practically all natural gas, and the resultant additional revenues to natural gasoline manufacturers was described by H. W. Harts of Warren Petroleum Corp. With a sudden market for one of these isomers—iso-butane—came the realization that its manufacture was not a simple job of fractionation. To manufacture this isomer it was necessary to install costly equipment for its manufacture, testing, storage and transportation, it was said. And with this realization came also the truth that "return on the investment was not the desirable picture that had been indicated at first glance," Mr. Harts said, in presenting a cost study pertaining to installation of equipment, operating costs and expected return on investment for the manufacture of iso-butane and iso-pentane.

Before expenditures are incurred in the extraction of iso-butane Warren's vice-president warned that operators take into consideration fact that 20% of the available product is lost in the various fractionators and that operating conditions must be exacting if desirable finished product is desired.

Cost of manufacturing iso-butane at a new Illinois plant, according to Mr. Harts, is 0.82c per gal. which is exclusive of loading losses, tank car rentals and payment for gas.

* * *

Ray E. Miller Elected to Presidency Of Natural Gasoline Assn. of America

DALLAS, April 28—Over 450 natural gasoline men, registered at the Natural Gasoline Ass'n. of America's 20th annual meeting here last week, elected to the presidency Ray E. Miller of Tulsa, vice president of Hanlon-Buchanan, Inc.

Mr. Miller's first official position with the association was in 1928 when he began a 6-year term as secretary-treasurer of N. G. A. A. The former secretary who was last week elevated to the presidency, had been vice-president of the group for the past 4 years.

Posts of vice-presidents were filled as follows: H. H. Beeson, Shreveport, Sabine Valley Gasoline Co., Inc.; H. A. Ells, Bartlesville, Cities Service Oil Co.; J. R. Jarvis, Dallas, Lone Star Gasoline Co. and J. W. Vaiden, Tulsa, Skelly Oil Co.

The directorate includes: R. E. Cornwell, New York, Carbide & Carbon Chemical Corp.; R. A. Carter, Ponca City, Continental Oil Co.; H. A. Ells, Bartlesville, Cities Service Oil Co.; J. R. Jarvis, Dallas, Lone Star Gasoline Co.; L. B. Jackson, Sapulpa Oklahoma Gasoline Plants, Inc.; Fred F. Ketchum, Charleston, Owens, Libby-Owens Gas Department; John B. Atkins, Shreveport, Parade Gasoline Co., Inc.; T. R. Goebel, Houston, Shell Oil Co., Inc.; R. D. Gibbs, Los Angeles, Union Oil Co. of California; R. N. Parks, Charleston, Virginian Gasoline & Oil Co.; S. F. Mauney, Jr., Tulsa, Carter Oil Co.; Allen T. Givens, Monroe, La., Coltexo Corp.; E. M. Parkin, Cut Bank, Mont., Glacier Production Co.; Paul M. Raigorodsky, Tulsa, Glen Rose Gasoline Co.; Ray E. Miller, Tulsa, Hanlon-Buchanan, Inc.; D. B. Dow, Bartlesville, Indian Territory Illuminating Oil Co.; C. E. Brock, Salina, Kansas Power & Light Co.; O. J. Dykes, Shreveport, Lisbon Gasoline Co.; George P. Bunn, Bartlesville, Phillips Petroleum Co.; H. H. Beeson, Shreveport, Sabine Valley Gasoline Co., Inc.; J. W. Vaiden, Tulsa, Skelly Oil Co.; R. E. Beckley, San Francisco, Standard Oil California; R. H. Hargrove, Shreveport, United Gas Pipe Line Co. and J. A. LaFortune, Tulsa, Warren Petroleum Co.

Always a highlight in the annual session of N. G. A. A. is the presentation of the Hanlon Award, recognized as the highest honor in the natural gasoline industry and one of the ranking merit awards in the petroleum industry. Fifth technologist to receive the award was Alois P. Kremser, San Francisco, assistant director of research and development for Standard Oil Co. of California. (see frontispiece, p. 4).

The citation of merit read in part: " . . . to your original formula for analyzing mathematically the operation of the absorption process, we owe much of our present understanding of stripping, rectification and heat transfer, all of which are fundamental elements in the production of natural gasoline and liquefied petroleum gases."

Recipients of the Hanlon Award since inception are R. C. Alden, Phillips Petroleum Co.; J. W. Cowles, Shell Oil Co., Inc.; G. G. Oberfell, Phillips Petroleum Co.; and Dr. G. G. Brown of the University of Michigan.

New Jersey Fuel Oil Group Hits Federal 2c Excise Tax

By N.P.N. Staff Writer

ASBURY PARK, N. J., April 26.—Opposition to the enactment of a federal tax on fuel oil was voiced in a resolution passed by the Fuel Oil Distributors Assn. of New Jersey at its 6th annual convention here this week. Resolution attacks HR-6, introduced in Congress by Rep. Boland, Pa., and HR-1019, introduced by Rep. Flannery, Pa., both of which seek a 2c per gal. federal tax on fuel oil used for heating and power purposes.

The 350 oil men attending the 2-day convention, which opened here April 24, heard Dr. R. T. Goodwin, Shell Oil Co., warn that Germany's petroleum resources are much greater than estimated by "arm-chair" economists.

"Germany's aviation gasoline is 87 octane and by another test runs close to 100 octane, which is what we use in America," he said, adding that while much of Germany's lubricating oil is made synthetically from rape-seed, "it is also of excellent quality." Having just returned from an extended trip through England for his company and on behalf of the Army and Navy, Dr. Goodwin spiked his talk with interesting sidelights about the war.

Sees Industry Prepared

Discussing petroleum industry's preparedness to meet national defense requirements, F. W. Lovejoy, Socony-Vacuum Oil Co., Inc., told the gathering that "if Adolph Hitler were to be so fortunate as to throw aside the British and invade our shores, even if he were to be so very fortunate as to destroy 3 out of 4 of all our oil wells throughout the nation, America would still have production enough to keep 50,000 airplanes a year in the air for a good many years."

Problems facing New Jersey legislators were outlined by State Senator Crawford Jamieson. He assailed the "seeming indifference" of the legislature. "If we had more groups of representative business men such as you behind us," the New Jersey lawmaker said, "we might get somewhere with beneficial, non-partisan legislation."

Fuel Importance Cited

G. E. Evans, Standard Oil Co. of New Jersey, spoke on "Fuel Oil and Today's Big Job." Mr. Evans stressed the importance of fuel oil in heat-treating steel plates for tanks, gun mounts, and motorized equipment. With the use of slides, he demonstrated forging machines for the manufacture of shells and cartridges, furnaces for case-hardening and carbonizing, and smaller units for rifle parts, fuses and priming heads.

Mr. Evans also pointed to the use of fuel oil in the new naval forces. Submarines and army mechanized units use diesel fuel as it reduces fire hazard, while new army camps mushrooming throughout the nation will call for large quantities for heating purposes, he said. New plants and railroads are turning to heating oil for industrial and transportation needs, the speaker maintained.

Other Speakers Listed

Other speakers of the 2-day session which was highlighted by the oil fraternity dinner, April 24, and the informal dinner dance the following evening, included John H. Walsh, Tide Water Associated Oil Co., who spoke on "Engineering Heating Oil to the Oil Burner"; Arnold Michelson, Minneapolis-Honeywell Regulator Co., who chose as his topic "Controls in Automatic Heating," and Thomas M. Gospill, Fidelity Union Trust Co., who addressed the convention on "The FHA Act—Its Operation and Its Renewal."

Frank Conant, Lawrence Systems, spoke on "Additional Profits" from the standpoint of financing inventories during first day's session. Convention was presided over by Ernest Studerus, Kearny, N. J., Studerus Oil Co., who was re-elected association president.

G. E. Evans

Mineral Law Counsel Plans May 5 Meeting

N. P. N. News Bureau

TULSA, April 28.—Counsel of the Section of Mineral Law of the American Bar Assn. meets May 5 at Washington to formulate a program for the coming year, according to announcement today by Alvin Richards of Tulsa, Pure Oil Co. counsel and chairman of the group.

'Uniform' Octane Test Sought by N.A.P.R.

N. P. N. News Bureau

CLEVELAND, April 28.—Resolution calling on federal government to establish one universal method of determining octane rating, passed by board of directors of the National Assn. of Petroleum Retailers at its spring meeting in Chicago, "has been circulated to membership and will soon for forwarded to the government and to majors for reaction," Carl G. Hodges, executive vice-president of N.A.P.R. said last week. Resolution states that use of different methods of test "results in confusion and misunderstanding of motor fuel quality and performance."

Jersey Fuel Group Re-elects Studerus

ASBURY PARK, April 25. — Ernest Studerus, Kearny, N. J., Studerus Oil Co., was re-elected president of the Fuel Oil Distributors Assn. of New Jersey at the association's sixth annual convention here April 24-25. Mr. Studerus has been president of the organization for the last 3 years.

Other officers named for the year which commences May 1, 1941, were: F. C. Conkey, Elizabeth, N. J., Fuel Oil Supply Co., vice-president; Walter Harnisch, Newark, Lindeman Coal Co., treasurer; and Stewart Craig, East Rutherford, N. J., Craig Fuel Oil Co., secretary.

A. W. Rich will continue as executive secretary, a post he has filled for the last 8 years. At the luncheon yesterday, he received notification of his appointment as chairman of the fuel oil committee of the New Jersey Defense Council by W. Garrison Metz, petroleum industry co-ordinator of the council.

In addition to these officers, the following were named as directors of the association: C. H. Bruett, Montclair, J. Blondel & Son, Inc.; J. F. Hoff, Jr., Princeton, N. J., Princeton Fuel Oil Co., former secretary of the organization; J. M. Di Bella, Teaneck, N. J., West Shore Fuel Oil Co.; H. A. Isaacs, Jr., Red Bank, N. J., Oil Delivery, Inc.; W. L. Yeomans, Plainfield, N. J., Plainfield Lumber & Supply Co.; and L. E. Marron, Passaic, N. J., Home Fuel Oil Co. Two new members of the board of trustees were named: Irving Sickley, Sickley Coal Co., and Harry E. Stahl, J. B. Richardson & Son, Inc.

French Named Chairman Of A.P.I. Committee

N. P. N. News Bureau

LOS ANGELES, April 28.—R. W. French, Continental Oil Co., Los Angeles, has been named national chairman of the Topical Committee on Production Practice, Central Committee on Drilling and Production Practice, of the American Petroleum Institute's Division of Production.

Chairman of district and other subcommittees are: California district, T. H. Acres, Richfield Oil Corp., Los Angeles; J. D. Robinson, Union Oil Co. of California, Bakersfield, Calif., vice-chairman for San Joaquin Valley section; California district subcommittee on gas engine maintenance, C. W. Neeley, the Texas Co., Long Beach, Calif.; Mid-Continent district, H. F. Beardmore, Amerada Petroleum Corp., Tulsa; Southwestern district, J. U. Teague, Hogg Oil Co., Houston; Eastern district, R. J. Sullivan, the Carter Oil Co., Mattoon, Ill.; special subcommittee on secondary recovery methods, P. D. Torrey, the Sloan & Zook Co., Houston; special subcommittee on primary pressure control, T. A. Huber, Humble Oil and Refining Co., Houston.

W.P.R.A. Will Publicize Asphalt Advantages

N. P. N. News Bureau

TULSA, April 28.—Board of directors of Western Petroleum Refiners Assn., has approved a resolution calling upon its officials and membership and the oil industry in general to publicize the advantages of petroleum asphalt in construction of low-cost highways, airport runways and other national defense projects.

The resolution points out, according to Roy S. Reed, chairman of the asphalt group, the advantages of petroleum asphalt over other construction materials serving the same purposes. It advocates an educational program whereby the industry would familiarize itself with the usefulness to which petroleum asphalt may be put. Eventually, it was said, the industry would enjoy the economic benefits from the general use of this product.

Oil Leases Held Taxable

N. P. N. News Bureau

WASHINGTON, April 25.—Internal Revenue Bureau has ruled that oil and gas leases of indefinite duration covering lands in Michigan, or assignments thereof, constitute conveyances of realty subject to stamp tax. (S. T. 917.)

Vander Leck Named Oil Producers Head

N. P. N. News Bureau

LOS ANGELES, April 28—Lawrence Vander Leck was elected president of the Oil Producers Agency at its annual meeting this week succeeding L. L. Aubert, who had held that office for the past two years.

Officers of the Agency for the current year include the following vice-presidents: M. A. Machris, Bandini Petroleum Co.; L. A. Cranson, Honolulu Oil Corp.; C. A. Johnson, Holly Development Co.; and C. P. Watson, Seaboard Oil Co. W. A. Russell, Seaboard Oil Co. was elected secretary-treasurer, and D. P. Murdy, Bandini Petroleum Co., assistant secretary-treasurer.

Dwight G. Vedder, Vedder Petroleum Corp.; Dewitt Knox, Macmillan Petroleum Co.; W. D. Waltman, Franco-Western Oil Co. and Cecil Rood were elected new members of the board of directors.

The following 8 directors, whose terms had expired, were re-elected: A. E. Bell, A. E. Bell Corp.; Rush M. Blodget; L. A. Cranson, Honolulu Oil Corp.; J. J. Doyle, Doyle Petroleum Co.; W. H. Geis, Arrowhead Oil Co.; R. H. Havenstrite, California Western Oil Co.; C. A. Johnson, Holly Development Co. and Mr. Vander Leck, Fullerton Oil Co.

Rush M. Blodget was re-elected general manager and executive vice-president.

Texas Hikes Order For May Production

AUSTIN, April 28—Texas oil operators are looking forward to increased production during May, after Railroad Commission's proration order for next month showed an increase of about 34,525 bbls. daily over the current month.

Commission also lifted one shut-down day for all fields outside East Texas and the Panhandle, and the fact that May has 31 days will give most of the fields 2 extra days.

In the Panhandle, there will be 4 idle days, leaving 27 producing days. In East Texas and the remainder of the state there will be 9 shut-down days, leaving 22 days for production.

Daily net allowable production for May was set at 1,417,222 bbls., but commission engineers figured that the normal underproduction of 49,603 bbls. daily during the month will give operators an actual production of 1,382,200 daily.

Commission did not change allowables in the fields where suits have been filed or threatened against the current proration order, Conoco-Driscoll in Southwest Texas and McElroy in West Texas being examples. In Old Ocean field, where a suit was filed a few weeks ago against the commission, a cut of 496 bbls. was ordered. All in all, there were few changes in gross allowables, the principal difference being in the shut-down days.

Kermit Field received the greatest reduction, 1490 bbls. a day. Other major reductions were:

Archer, 985; Wichita, 901; Young, 665; McCamey, 557; Loma Novia, 782; Aransas, 468; Hamman, 425; Hull, 430; Barbers Hill, 508; Wilbarger, 411; Cooke, 408; and Montague, 402.

California's Crude Quota Remains Same for May

N. P. N. News Bureau

LOS ANGELES, April 28.—California's daily crude quota for May was recommended at 571,000 bbls. by Conservation Committee of California Oil Producers.

Committee ignored proposals of its allocation subcommittee for increase of 15,000 bbls. daily to take care of higher demand for fuel oil. Representatives from heavy oil districts opposed suggested increase as contrary to economic trends. Quota is unchanged from April.

Louisiana Crude Allowable Hiked 320,000 Barrels

Special to N. P. N.

BATON ROUGE, April 28.—Louisiana's May crude oil production allowable has been set at 320,324 bbls. daily, 19,431 bbls. over April and 24 bbls. above the Bureau of Mines' demand forecast.

South Louisiana fields received most of the increase, advancing 16,832 bbls., to 250,023 bbls. daily. North Louisiana production allowable was set at 70,301 bbls. daily, up 2599.

Conoco's Labor Problems To Be Settled by NLRB

N. P. N. News Bureau

WASHINGTON, April 28. — Supreme Court today instructed National Labor Relations Board in Continental Oil Co. case to use its judgment whether policies of Wagner Act would be effected by requiring Continental to re-employ two former Big Muddy, Wyo., field employes because of alleged discriminatory treatment for union activities.

Board had ordered Continental to re-instate 2 employes notwithstanding company's contention they were no longer "employes" entitled to such re-instatement since one had secured a job in Wyoming Penitentiary and the other had become a store owner.

Rails Shun 1c Cut In Mid-West Rates

N. P. N. News Bureau

TULSA, April 28.—Executives of southwestern and Western Trunk Line railroads, meeting in St. Louis last week, "turned thumbs down" on a proposal calling for reductions of approximately 1c a gal. in rail rates from the Southwest to the mid-western and northern destinations.

In disapproving S.W.F.B. proposal 24106 and W.T.L. application 37-562, rails adopted the "maximum" scale of rates ordered by the ICC and calling for less drastic rate cuts. In overriding the suggested proposal based on 85% of the "maximum" ICC prescribed rates, railroads turned down suggestion of ICC Commissioner Splawn that this scale was "reasonable".

Proposals calling for the approximate 1c reductions were pushed by Petroleum Shippers Assn. and other independent refiners in an effort to penetrate again into those marketing areas where they said "discriminatory transportation charges" acted as a barrier.

Next Move Unknown

No announcement has been made by P.S.A. as to what its next course of action will be. Some shippers, it has been indicated, are considering possibility of pipeline transportation as a means of re-entering these northern markets. Others, however, are said to be reviewing possible steps that might be taken regarding the rail rate situation.

Meanwhile, P.S.A. officials announced appointment of the following "contact committee" composed of traffic managers and designated to work with an executive committee composed of southwestern refinery executives: Douglas Orm, Big Spring, Tex., Cosden Oil Corp.; Percy Anderson, El Dorado, Lion Oil & Refining Co.; R. B. Shepard, Oklahoma City, Anderson-Prichard Oil Corp. and H. G. Watts, Wichita, Derby Oil Co.

Pipeline Testimony Amplified by Simms

N. P. N. News Bureau

CLEVELAND, April 28. — Amplification of his testimony on southeastern pipeline situation before the House Oil Investigating Subcommittee, headed by Congressman William P. Cole, Jr., (NPN April 9, p. 12), was given today by H. H. Simms, traffic manager, Atlanta & Saint Andrews Bay Railway Co.

In his testimony, Mr. Simms was reported as having scored the national defense angle as a "flimsy excuse" for building the pipelines, to which Chairman Cole replied that his statements tended to reflect on the President and the Secretaries of War, Navy and Interior. Mr. Simms said today:

"In replying to Mr. Cole, I stated that I felt the President, as well as the Secretaries referred to, were like everyone else susceptible to making errors and that an error had been made in this instance; that the President had too much to do, trying to take care of the country as a whole, to give his personal attention to the details of a little pipeline down in Georgia and, as a consequence, had to depend on information furnished by subordinates and that such information had been misleading, misinterpreted, biased and actual facts misunderstood and that if permitted to do so, would show that such was actually the case. I then proceeded to explain fully the complete ability of the present transportation agencies to adequately supply the territory to be served by these pipelines (Southeastern Pipe Line Co. and Plantation Pipe Line Co.) at no additional cost to the public, but at some possible additional cost to the oil companies.

"On being quizzed about the permission of the state of Florida to build a line through that state, I replied that the people of Florida had not been permitted to express an opinion; that the permits to cross the state highways had been issued by chairman of the State Road Department, who resigned immediately after the permits were signed, and that I felt that all concerned would much rather that nothing further be said about the Florida situation."

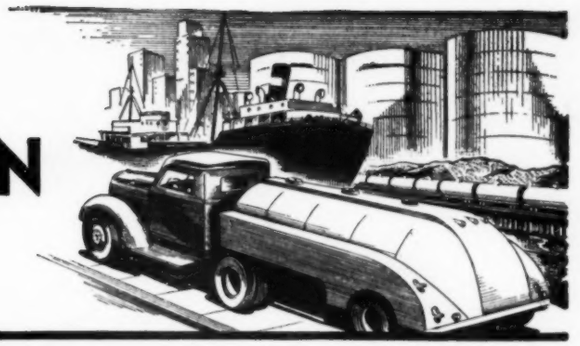
Carter and Louark Merger Approved

TULSA, April 28. — Approval of the merger of Carter Oil Co. and Louark Producing Co. by stockholders of the two companies was announced today by company officials. The merger takes effect May 1.

The Louark company was organized to operate the producing properties of the Standard Oil Co. of Louisiana.

The merger brings to Carter's Tulsa office as director and manager of production J. R. McWilliams, who has been president of the Louark company. William A. Watkins, Carter's eastern division superintendent, will be transferred to Shreveport May 1 to take charge of Carter's new southern division comprising Louark's production in Arkansas and Louisiana and Carter's operations in Mississippi, Alabama, Louisiana and Arkansas.

OIL TRANSPORTATION



Status of Trucker Uncertain As Wage-Hour-ICC Laws Clash

N. P. N. News Bureau

WASHINGTON, April 23.—Differences in viewpoint and in law which cause Wage-Hour Division to regard oil truckers, exempt from Motor Carrier Act as intrastate operators, to be subject to Wage-Hour Act is illustrated in petition filed by Fred W. Cloud, Billings, Mont., with Interstate Commerce Commission.

Cloud, who is asking ICC for certificate of convenience and necessity in an effort to clarify his status, has informed Commission that he has been told he is subject to Wage-Hour Act, even though he is engaged in transportation of crude oil and petroleum products between cities wholly within State of Montana. He also recalls that in 1938 he was refused a certificate of necessity and convenience of ICC on ground he was not engaged in interstate commerce.

Reasons Given

In his petition, Cloud states that Wage-Hour Division representatives have informed him that he is subject to the Wage-Hour Act for following reasons: "(a) that in his operations he hauls crude oil from oil fields in Montana to the Home refinery at Great Falls, and that some of the gasoline refined and processed from said crude oil is sold by the Home Refining Co. in interstate commerce, and (b) that in the applicant's operations he sometimes transports grease and motor oil which comes from outside the state of Montana to service stations within the state of Montana, and that said operations are in interstate commerce notwithstanding the fact that said greases and motor oils have previously come to rest in the Home Refinery at Great Falls, Mont."

Wage-Hour attorneys, explaining why their Division regards transportation of crude oil under such circumstances as subject to the Wage-Hour Act, say a trucker is supplying transportation service essential to production of goods for interstate commerce when he hauls crude to a refinery which sells any of its products in other states.

Interstate Commerce Commission attorneys consider Motor Carrier Act as applying to truckers hauling crude oil only when they are transporting such crude to a rail, truck or marine terminal for shipment into another state.

Wage-Hour Division is disposed to regard petroleum products moving from one state into another as being in interstate commerce until delivered to the retailer, according to Wage-Hour attorneys, who contend a trucker delivering to filling stations products of a refinery which receives such products wholly or in part from other states, is covered by Wage-Hour Act.

Interstate Commerce Commission would regard the same trucker as in intrastate commerce, on the ground ICC jurisdiction ends when products received from other states are delivered from railhead and come to rest at refinery.

Reopening of I.C.C. Hearings Sought by Pipeline Companies

N. P. N. News Bureau

WASHINGTON, April 24.—Interstate Commerce Commission is expected to reach decision within next month on holding of further public hearings asked by virtually all of respondent pipeline companies in ICC's crude pipeline rate investigation. (ICC Docket 26570)

Hearings, in event ICC accedes to pipeline companies' request for reopening of proceedings, will be devoted to gathering of evidence relating to Commission's proposal to establish maximum rates based on 8% on investment and minimum tenders not in excess of 10,000 bbls.

Request of pipeline companies for further public hearings was made in connection with filing of answers to Commission's order requiring them to show cause why ICC should not reduce their rates to an 8% return and their minimum tenders to not more than 10,000 bbls. Final date for filing answers was April 23.

Hit 8% Return Basis

Companies generally in their answers have expressed dissatisfaction with 8% return basis. Gulf Refining Co., citing recent ICC decision in Petroleum Rail Shippers Assn. case (ICC Docket 28106), contended crude pipelines should be permitted to use a broader rate-making basis. Atlantic Pipe Line Co., mentioning same decision, proposed crude lines should be given at least the 10% return basis accorded gasoline pipelines.

"Commission's present order would cripple the expansion of pipeline construction which is shown by the record to be the cheapest transportation of crude oil or of any other commodity of like kind and character in the U. S.", Gulf stated in its answer. "In this time, conditions are abnormal and the world is in a chaotic condition and the resources of the United States are being exerted to their limit to prepare this country for national defense."

Gulf then went on to apprise ICC of the southeast pipeline situation where refusal of Georgia state legislature to grant rights of way has blocked construction of Southeastern Pipe Line, in which it is interested, and of proposed Plantation Pipe Line.

Emergency Cited

Three other pipeline companies urged ICC to take no steps during current national emergency "that would tend to reduce the capacity for service of the agencies engaged in transporting such an important commodity as crude petroleum." These were Indiana, Buckeye, and Northern pipe line companies, and New York Transit Co., which said they believed existing conditions as to ocean transportation from Gulf ports to Eastern Seaboard make it important that pipelines engaged in the transportation of crude oil be kept at the maximum of efficiency.

Various pipeline companies, in filing their answers, said they would have no objection to 10,000 bbls. minimum tender proposed by ICC, if safeguarded by regulation preventing undue loss from contamination of different grades of oil while in transit. Others merely stated that their minimum tender requirements did not exceed 10,000 bbls.

Companies Listed

Companies whose answers were on file with ICC, when April 23 deadline was passed, included: Pan American Pipe Line Co.; Gulf Refining Co. (successor to Gulf Pipe Line Co., Gulf Pipe Line Co. of Oklahoma, Gulf Pipe Line Co. of Pennsylvania, Gulf Refining Co. of Louisiana); Indiana Pipe Line Co.; Buckeye Pipe Line Co.; Northern Pipe Line Co.; New York Transit Co.; Tidal Pipe Line Co.; Texas Pipe Line Co.; Atlantic Pipe Line Co.; Stanolind Pipe Line Co.; Tide-Water Pipe Co., Ltd.; Sinclair Refining Co. (successor to Sinclair Prairie Pipe Line Co., Sinclair Pipe Line Co. of Texas); Humble Pipe Line Co.; Texas Empire Pipe Line Co.; Illinois Pipe Line Co.; Standard Oil Co. of La., pipeline division (formerly Standard Pipe Line Co.); Oklahoma Pipe Line Co.; Transit and Storage Co. (formerly Imperial Pipe Line Co., Ltd.); Ajax Pipe Line Corp.; and Tuscorara Oil Corp., Ltd.

Tanker Rates Show No Change in Week

NEW YORK, April 28.—Tanker rates for both "clean" and "dirty" tonnage remained unchanged the past week, with 50c for gasoline, 53c for kerosine, and 57c for No. 2 heating oil; 50c for 30 gravity or lighter crude and 57c for 10-19.9 heavy fuel the prevailing rates based on last reported fixtures. Demand continued good with "scarcely a ship available," according to several boat men.

Rate Modification Refused by I.C.C.

N. P. N. News Bureau

WASHINGTON, April 28. — Interstate Commerce Commission has refused to modify its order No. 17,000, Part 4 (rate structure investigation, petroleum and petroleum products) to permit Southern railroad carriers to reduce rates on refined petroleum products in carloads from New Orleans-Baton Rouge group to destinations in western Georgia and to intermediate destinations in Alabama and eastern Mississippi without corresponding reductions from southwestern groups.

Commission, in deciding case, however, held that Smackover, Ark., should be accorded same relief from Fourth Section on gasoline, kerosine, and fuel oil distillate in tankcar loads to Florence, Sheffield, Decatur, and Guntersville, Ala., and Chattanooga, Tenn., and intermediate destinations as previously was accorded El Dorado and Pearson, Ark. In granting relief to El Dorado and Pearson, I.C.C. decided rates from these two points to destinations in question should not exceed those from the New Orleans-Baton Rouge group by more than 3.5c per hundredweight.

Commission, in another decision, has authorized Louisville and Nashville Railroad Co. to establish, without observing long-and-short-haul provisions, minimum rate of 14c per cwt. on gasoline, kerosine, and fuel oil distillates in tank car loads from Spottsville, Ky., to Clarksville and Nashville, Tenn.

Tanker Charters Approved By Maritime Commission

N. P. N. News Bureau

WASHINGTON, April 25.—Maritime Commission has announced that during the week ending April 19 it approved charters to aliens, of vessels documented under the laws of the United States, as follows:

Tanker CITIES SERVICE MISSOURI by Cities Service Oil Co., New York, N. Y. to Anglo-Saxon Petroleum Co., Ltd., London, for one voyage with a cargo of crude oil, or fuel oil, or diesel oil, or dirty gasoil, from Aruba or Curacao, N.W.I., to Lisbon, Portugal, loading commencing on or about May 20-June 15, 1941.

Barge OIL TRANSFER NO. 25 and the Oil Screw Tug OTCO by Oil Transfer Corp., New York, N. Y. to Shell Oil Co. of Canada, Ltd., for the period from May 1, 1941 until Aug. 15, 1941, with cargoes of crude oil for trading between Toledo, O., and Montreal.

Tankers PANOIL or MEXOIL by Great Lakes Transportation Corp., Detroit, to Dominion Tar & Chemical Co., Ltd., Montreal, for two voyages with cargoes of coal tar from Sault Ste. Marie, Ontario or Detroit, Mich., to Toronto, loading commencing on or about April 25 and June 1, 1941.

Tank Barge RUSSELL 23 and Tug

J. RAYMOND RUSSELL on behalf of Poling-Russell, Inc., chartered owners, to Shell Oil Co. of Canada, for a period commencing with the opening of navigation on the Great Lakes until the close of navigation at the end of the 1941 season, for consecutive voyages with cargoes of crude oil, from Toledo, O., to Montreal.

Tanker A. H. DUMONT by Diesel Tanker A. H. DUMONT, Inc., New York, N. Y. on behalf of Spentonbush Fuel Transport Service, Inc., chartered owners, to Shell Oil Co. of Canada, Ltd., for a series of consecutive voyages with cargoes of crude oil from Toledo, O., to Montreal, commencing with the opening of navigation on the Great Lakes and until the end of the 1941 season.

Effort To Exempt Service Stations From Texas Chain Store Tax Debated

Special to N. P. N.

AUSTIN, April 28.—Major oil companies, dealers and lessees, were cheered this week at prospects of getting the provisions of the Texas chain store tax lifted off their shoulders.

An amendment tacked onto the omnibus tax bill now being bitterly debated in the Senate exempts service stations from the chain store tax. (See NPN, Oct. 9, 1940, p. 13 and Feb. 5, 1941, p. 16).

Major companies received a blow last October when Texas Supreme Court refused to review a lower court decision which held that service stations are stores, and thereby subject to the chain store tax. Tax runs up to $750 annually for each unit of a chain, and the annual tax will run into astronomical figures for major companies which own or control their retail outlets.

A suit is still pending against Humble Oil and Refining Co., in which the state is suing this company alone for $730,000 in back taxes under the chain store law. Several other companies, among them Standard Oil Co. of Texas, paid the state claims when the U. S. Supreme Court refused to review the Texas court decision.

Out-of-state oil men and service station operators were alarmed at the tax for fear that other states would follow suit.

An amendment to the omnibus bill, written by the legislative representative of Texas oil interests, exempts service stations from the chain store tax where 75% of the station's income is derived from petroleum products. It is believed this would cover the great majority of service stations, and would keep a five-and-ten cent store, for instance, from setting up gasoline pumps in the rear of the store and calling itself a service station to avoid the chain levy.

The amendment was passed almost unchallenged by the Senate taxation committee and has drawn no attention from the floor of the House. If approved by the Senate, it will have to go to the House for confirmation, but oil company representatives told NPN April 28 that they believed the amendment will go through all right.

Law Not Retroactive

The exemption of service stations will not affect the suits on file or contemplated by the attorney general's department against majors for back taxes. About a month ago, however, Atty. Gen. Gerald Mann warned the legislature against altering the chain store tax bill because of the danger of compromising the state's suits against Humble and others.

Another bill, yet to be acted on, repeals the chain store tax entirely, which would automatically take care of service stations if passed. It has been approved by the Senate committee. Oil interests, however, doubled their chances of lifting the tax from service stations by putting the exemption amendment into the tax bill, where it will attract less attention.

'Joker' in Wording

Chances of the amendment's passage were enhanced by the admission of senators and representatives that the original chain store tax was not meant to include service stations. The law specifically exempted " . . . any place of business engaged in the storing, selling, or distributing of petroleum products or servicing of motor vehicles . . . "

The joker in the wording of the bill, soon seized upon by state tax collectors, was the word "exclusively." The courts held that any service station which sold anything except oil and gas (tires, radiator caps, fan belts, etc.) would automatically come under the tax and would not be exempted.

Battle Over $1,000,000 in 'Gas' Taxes Continues at Deadlock in Connecticut

N. P. N. News Bureau

NEW YORK, April 28.—The deadlock between Connecticut's motor vehicle commissioner and virtually every oil distributor in the state over gasoline taxes was apparently still a deadlock today as letters from State Treasurer Frank M. Anastasio to 168 Connecticut distributors threatening revocation of their licenses went unanswered, as far as could be learned.

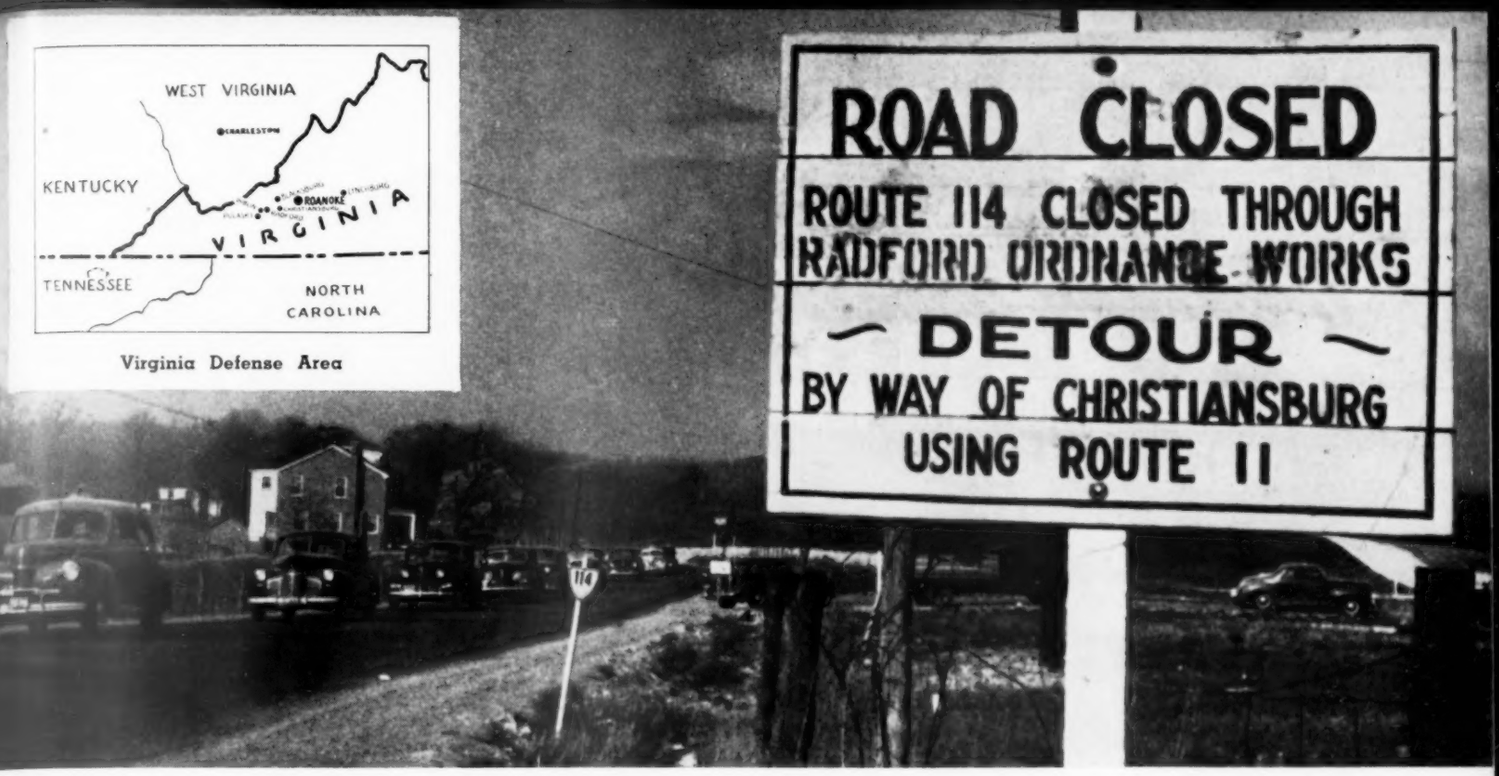
Connecticut's motor vehicle commissioner started his battle in late 1939 to collect tax on the difference between the amount of gasoline received by Connecticut distributors and the amount reported by them as having been sold for the period 1933 to date. Following a test case of Connecticut's gasoline tax law, decision which was handed down Aug. 13, 1940, the commissioner redoubled his efforts and asked for back taxes plus 9% interest and started sending out bills. Some of the distributors replied to the effect that he had misconstrued the decision in the test case.

In this decision, Judge King of Hartford County Superior Court held that Connecticut's gasoline tax applies only to gasoline actually sold or used, and that gasoline lost by evaporation or spillage "is neither sold nor used, and does not come within the general scope of the taxing statute."

Interprets 'Intent'

In interpreting the "legislative intent" of the assembly, however, Judge King stated that distributors were required to account for all gasoline purchased, received or compounded within the state, and they have the burden of proving that the difference between the amount received and the amount reported as sold or used was actually neither sold nor used.

While neither side has appealed the controversial "compromise" decision of Judge King, the Connecticut distributors continue to sit tight on the contention that the motor vehicle commissioner has misconstrued the decision and the motor vehicle commissioner continues to push for settlement of an alleged tax obligation which aggregates $1,000,000. Meanwhile, interest on this alleged obligation is piling up at the rate of 9%.



Virginia Defense Area

A long line of cars is the order-of-the-day in late afternoon when southwestern Virginia defense workers head home from the Radford Ordnance Works. Oil marketers report higher wages are increasing oil, service and equipment demands for many car owners

Virginia 'Bullet Factories' Boom Expands Oil Marketing Facilities

This is the 8th in series of NPN articles on how defense projects are affecting oil marketing in various sections of U. S. Next week's article will be based on defense activities at North Carolina's Fort Bragg.

DOWN in the Blue Ridge Mountains of Virginia, a $50,000,000 "bullet factory" of Uncle Sam's is booming gasoline gallonage over a wide area. But it is also bringing new problems of distribution and merchandising to oil marketers in this heretofore quiet district. For the gallonage is increasing way beyond the physical facilities to take care of it and way beyond the man power and training of many of the operators of retail outlets.

Roadside pumps that did a few hundred gallons a week have jumped to thousands of gallons, while city stations have doubled and trebled their sales. Some bulk plants are putting through 3 times their normal volume and marketers are rushing construction or plans for new bulk plants.

There has been nothing like it in the history of the countryside.

Customers are driving into stations and *asking* to have their cars lubricated and oil changed. And in some towns there wasn't a grease pit, much less a lift at any station. For customers wanting a lube job, station operators had to use hand-operated equipment. Frequently, the customers were told "bring it back tomorrow and if we ain't too busy, we'll grease it then."

Buying habits of oil marketers' customers are changing as southwestern Virginia's defense boom boosts living standards of these frugal, mountaineer folk. Many of the 20,000 defense workers are "hill country" people who have had to watch every penny for generations. Quite a few never owned cars; those that did seldom drove to town.

One station operator tells of his surprise when a defense worker drove in and asked that his crankcase be drained and refilled with first-grade oil. Last time, this station man recalled, this "customer" had brought along a drum and wanted to fill it up with crankcase drainings to take back home for use as "motor oil."

But that is changing now. Each day at crack of dawn hundreds of "hill billies" drive their cars down one-lane, rutted roads from the mountainous region made famous in the book, "Trail of the Lonesome Pine." From 50 and 60 miles away they come, converging on Radford where jobs in the two neighboring munitions projects are paying them wages which they never dreamed of before.

Radford was a sleepy, one-main-street town of 6828 population until late last summer when Uncle Sam decided to locate a $44,000,000 smokeless

CROWDED street scene in Radford, Va.

This new station, on edge of Pulaski, Va., in direction of the two defense projects, is being built by a private-brand marketer with headquarters in Roanoke, Va.

The Trend toward Hose Reels

INSERT SHOWS *reel for Red Seal Hose Reel Pump. Easy-pull . . . self-winding, long reach and quick return . . . double-bearing mounting. Leak-proof Cooke seal.*

Red Seal Model 855 Pumps of any type are equipped with adapter on which globe or lighter can be installed. Typical use of lighter is shown above.

NEPTUNE RED SEAL

and Station Lighters

MODERN STATION HINTS
Speed-up Deliveries!
• Keep the strainers of your pump and meter clean. By so doing, you maintain the gasoline flow rate at maximum and insure faster deliveries. Time lost in slow deliveries, keeps customers waiting—and sometimes, on a busy day, may result in an actual loss of sale.
NOTE: Red Seal strainers are quickly and easily accessible. See pump strainer assembly illustrated here. Unbolt three cap screws—and off comes the leak-proof flanged cover.

IF YOU AREN'T getting profitable gallonage, the true reason may lie—not in your location—but in the fact that your filling or service station isn't properly modernized.

Modernization includes station design, arrangement and equipment. Have you checked each? And bear in mind that no item of equipment comes more closely under the public eye than your GASOLINE DISPENSING PUMPS.

Station Lighter pumps make an attractive daytime exhibit; and, when they light up at night, are a sure indication that your station is open so long as the brilliant illumination stays on. No chance of customers slipping past! A well-lighted station stops traffic . . . draws new business constantly.

Hose Reel devices on pumps add much to the trim neatness of your station as well as to convenience. When the hose is not in use, the short unreeled section of its length lies snug and flat against the side casing—out of the way. A hose reel pump speeds up service . . . a big help in pleasing impatient customers on your heavy traffic days. The reel also saves hose wear.

Red Seal pumps not only make station lighter and hose reel available to you, but also are thoroughly modern in every other respect. One of the commonest of pump problems is to eliminate troubles such as leakage. A Red Seal pump is of ***leak-proof construction throughout.*** For example:

The Red Seal pump does away with stuffing-box leaks and troubles in the pumping mechanism by the simple expedient of actually doing away with the stuffing-box itself! By means of this ingenious construction, any gasoline escaping through the inner pump bearing drops from the shaft into the air separator chamber from which it is returned through a float operated valve to the suction side of the pump. No gasoline escapes into the housing. A fire hazzard is eliminated.

Look into ***all*** of the many RED SEAL special-engineered features—not forgetting the RED SEAL UNIT EXCHANGE PLAN, which puts pump upkeep on a new low-cost basis. Be sure to ask your nearest Neptune office about this Plan.

NEPTUNE METER COMPANY—Main Office: 50 West 50th St., New York, N. Y. Branches in Atlanta, Boston, Chicago, Dallas, Denver, Kansas City, Los Angeles, Louisville, Philadelphia (Philadelphia Meter Co.), Portland (Ore.), San Francisco, Toronto.

METERS FOR: BARGE AND TANK CAR UNLOADINGS • LOADING RACKS • DELIVERY TANK TRUCKS

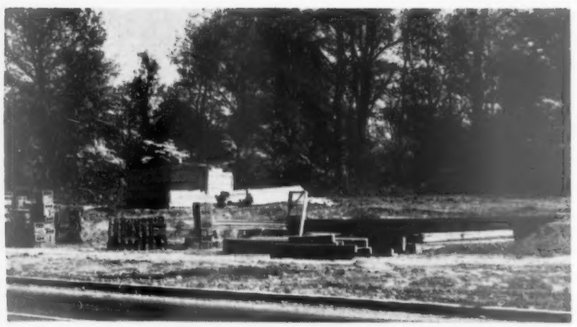
PUMPS

1628

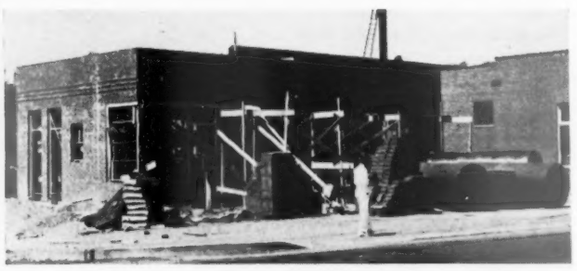
Photo courtesy of Earl L. Gingerich

TWO-BAY STATION on Williamson Road, nearer downtown section of Roanoke

AN INDEPENDENT JOBBER. James River Oil Co. of Richmond, Va., built this station in Roanoke, on Williamson Road leading to Route 11



FOUNDATION for another Williamson Road station is shown here



ANOTHER STATION on Williamson Road, at edge of Roanoke, Va., is this brick station

powder plant — Radford Ordnance Works—about 5 miles north, and a $14,000,000 powder-bag loading plant 8 miles west. Now, Radford's population is about 10,000. Its streets are jammed and "boom town" earmarks stick out everywhere. Soaring land prices have held back gasoline station construction, but several new stations are planned. Three marketers—perhaps more—are reported considering new bulk plants in Radford, others are expanding present facilities.

Dublin, 8 miles away and semi-circled by the bag-loading plant, is just entering its boom era. It's like a gold-rush town. Five filling stations are building and one was completed in past 10 days. This about doubles the town's station population. Its human population numbered about 400 before the boom.

Roanoke, about 50 miles away from the two defense projects, supplies many workers and is trading center for southwestern Virginia. It, too, has a boom—car registrations, for example, are 20% ahead of last year. Considerable construction and improvement of stations is going on in Roanoke. Setting the pace is a new, independent jobber who is pioneering a major company brand in this area. This jobber has built 3 stations recently, is planning 3 more—all in Roanoke. At least 1 company is going to build a new and larger bulk plant here this year.

Nearly every marketer in the defense boom area of southwestern Virginia is adding new trucks, installing larger truck tanks or otherwise speeding up his distributing facilities, although several insist "we'd have done so anyway, boom or no boom."

Marketers Confronted With Two Problems

Oil marketers in every defense boom area—especially in southwestern Virginia—are faced with solution of two important problems brought about by the boom.

First, there is the matter of keeping their distributing facilities in step with gallonage gains. Inadequate bulk plants—both as to storage and equipment—and insufficient or inefficient tank truck capacity are the bottlenecks which can choke off a marketer's chances of getting his full share of the gallonage increase.

Second problem is to improve merchandising at their stations and "cash in" on opportunities to sell "plus profit" items—lubrication services, oil changes, tires, batteries, seat covers and other accessories. With increased purchasing power, defense workers are customers now for something more than gasoline and make-up oil. But they still must be sold because many have not been in the habit of buying "extras" for their cars.

In southwestern Virginia, there are several factors which complicate solution of the distributing and merchandising problems that came with the defense boom.

Southwestern Virginia is mountainous country. Except for the main highways, there is relatively little traffic. Towns are few and distances far between. There are many small-gallonage outlets—every country store must have a gasoline pump. Some of these outlets have tanks of 280-gal. capacity. Marketers have been using small-capacity tank trucks—high hills and high taxes, plus these small outlets are among the reasons. Some marketers use 600-gal. tanks on their trucks; most are 900 gals. or under.

Now, some of these roadside pumps have jumped from a few hundred gallons a month to several thousand. With defense workers drawn from all over the mountains, the gallonage boom has spread even to the backwoods pump. It has kept tank trucks hustling to keep these small outlets from running dry.

In the larger towns, a station doing 5000 gals. a month was a "good" outlet; 8000-10,000 gals. was "very good." Stations of 15,000 to 20,000 were exceptional; above that volume, rare. Generally, stations along the highways and in the towns had the tankage, at least, to handle a gallonage twice as much as they were doing. So, the pressure hasn't been as severe as at the country-store type of outlet.

Even though the gallonage gain may be spread over a wide area the total increase in gallons must funnel through the bulk plants. And many plants were not built to handle anywhere near the gallonage they have been putting through. One plant in the defense area turns over its gallonage every 3 days on the average; several times the plant would have run dry except for holding tank cars on the siding. "And that means demurrage bills," this marketer said.

Add Trucks and Tanks

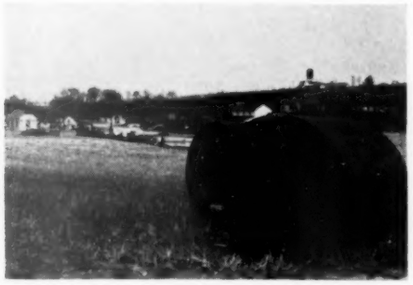
Many marketers are adding new trucks with new and larger tanks. Others are equipping their present truck chassis with larger tanks, some even upping capacities from 900 to 1600 gals.

Additional truck capacity, plus larger underground storage at stations and roadside outlets (it doesn't pay to dig up a 280-gal. or 550-gal. tank and replace with a large tank, some marketers say, so they just add another small tank, doubling the capacity), has solved the trucking problem. But there still remains the need for added storage and speedier handling of trucks at bulk plants.

Bulk plant from which gasoline was delivered to Radford ordnance project, running as much as 200,000 or more gals. a month, added 5 tank trucks but didn't increase tankage. However, all lines were increased from 2 inches to 3 inches and larger pumps installed. At least 1 of these trucks was added because of his regular gallonage gain at stations, this marketer said.

One marketer with 8 stations—and building another—has no bulk plant. He has a transporter hauling for him out of a Virginia ocean terminal, several hundred miles away, and dumping directly into his station tanks. These tanks are large enough to take full

Here are four of the six stations under construction in Dublin, Va., the little boom town which is almost encircled by the New River Ordnance Works, bag-loading plant



Dublin, Va., pop. 400, has a defense project coming right up to its back door. This picture, taken from a nearby hillside, shows most of the town. Tanks in foreground are another gasoline outlet—supplier so far undisclosed

3500-gal. dump and still have space to spare. Solving the distributing problem due to booming gallonage simply meant the transporter added more trucks.

Another marketer has added tankage at 7 of his 9 bulk plants; 12,000-gal. tanks have been added at each of 6 plants and a 20,000-gal. tank at his Roanoke plant. He is also increasing the tank capacity of his 18 tank trucks. It is his policy to replace each truck every 4 years, which means he buys about 4 trucks each year. This year he expects to buy 5 tank trucks. These new trucks, together with the larger tanks on his present trucks, he believes, will see him through this year. By getting more out of each piece of equipment on the road, this marketer can handle increased gallonage without adding more drivers.

One marketer is considering doing his own transporting; his shipments now come in by rail from an ocean terminal. He has figures all drawn up as to costs of hauling in his own transport trucks.

Another bulk plant near defense projects has added two 16,000-gal. tanks to handle its share of gallonage increase, also adding new lines to loading rack.

One company considering new bulk plant in Radford would put in double its present storage capacity. Plan would also include a new station adjoining bulk plant.

New Sales Opportunities

Two centuries of frugal living cannot be erased even by a boom putting undreamed-of wages in pockets of mountaineers and small-town residents of southwestern Virginia. While defense workers have the money now to satisfy their wants, they still must be sold.

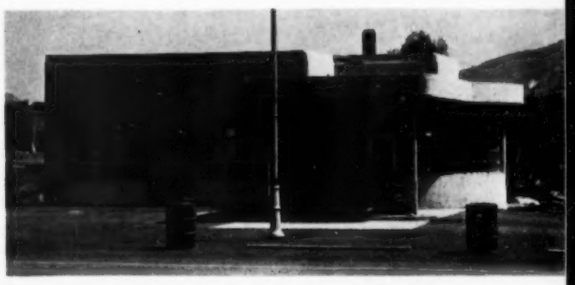
Marketers are pointing out to their station operators that the defense workers now can afford not only needed replacement items, like tires, batteries, light bulbs and spark plugs, but they will still have money left for some "dolling up" of their cars. Sales opportunities are open for seat covers, mirrors, polish and similar items.

Many station operators apparently had done business on the theory that a "filling station" meant that it was an outlet for gasoline—and motor oil, if the customer asked for it. Accessories like batteries, tires and windshield wiper blades were items which everybody bought at a chain accessories store or from the mail order house. That attitude still prevails at some stations, despite marketers' efforts.

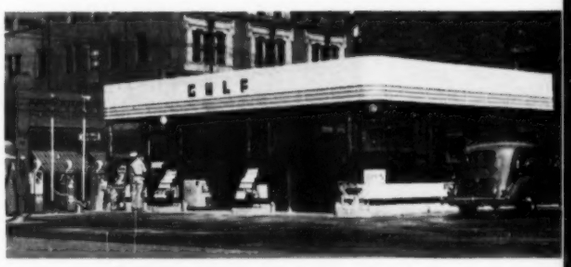
Two engineers at the powder plant project told of driving their cars into Radford stations and asking to have their cars lubricated and oil changed. In each instance, they said they were told, in effect, "We're too busy now, come back tomorrow and maybe we can do it then."

A traveling auditor for an insurance company matched these stories by recounting how he had asked a garage to check something wrong with his

SMALL STATION going up in Roanoke business district



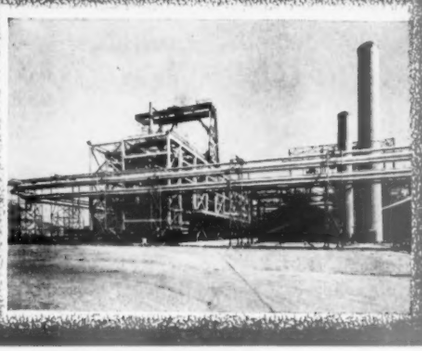
STREAMLINING AND GLASS BAY WINDOWS make this new Atlantic station eye-catching. It is going up on edge of Roanoke, on Route 11—the famous highway up through the Valley of Virginia.

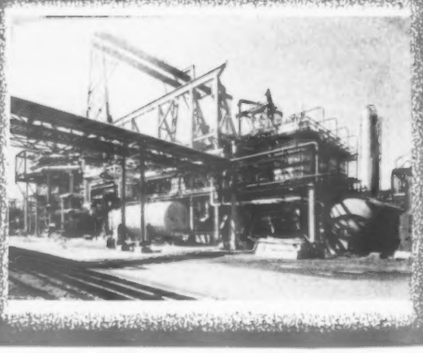


This new station, made of glass, enamel and steel, in downtown Roanoke is really portable. It was dismantled at its location in a town about 75 miles from Roanoke and hauled in one truck to its new site. It was built by Paul P. Hunter, Gulf distributor. Only the station building was moved, all equipment is brand new

NEW STATION near railroad station has lots of traffic passing its entrances

CALIFORNIA





A Joins the HOUDRY Column

A 10,000-bbl.

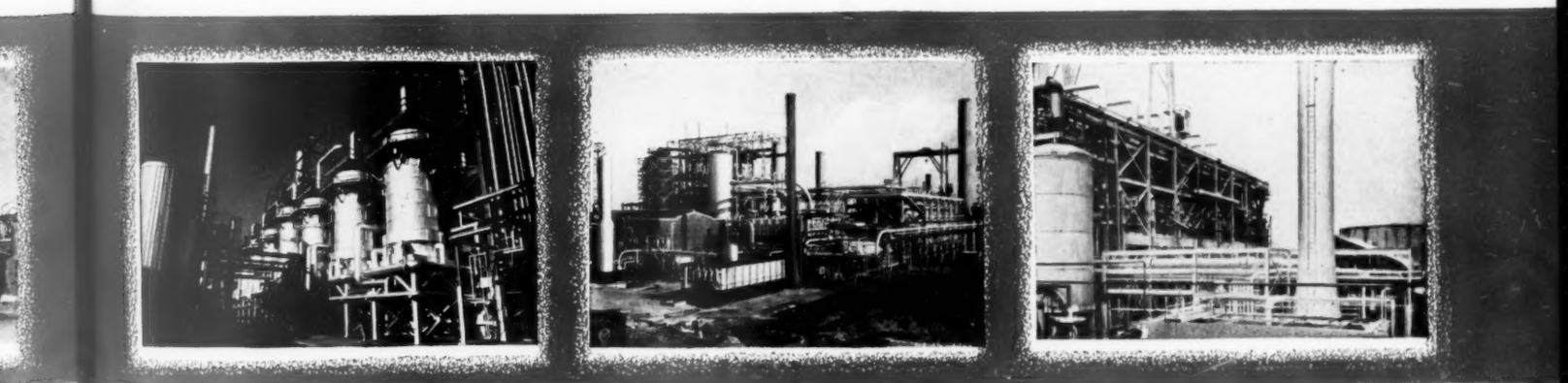
Catalytic Cracking Unit is now being built in California with detailed plans worked out by Badger engineers in co-operation with the owner's engineers.

Photograph shows the new Houdry Research Laboratory consisting of Research, Physical Test, and Development buildings.

When completed, this unit will make a total of some 200,000 bbls. Houdry Catalytic Cracking capacity devoted to the production of high octane aviation and motor gasoline and fuel oil . . . with all operations having these very useful features:

FLEXIBILITY ★ ADAPTABILITY ★ STABILITY

The Houdry Catalytic Cracking Process has proved beyond any question that with it, character of output can be varied over wide ranges at will; that it can operate on a wide variety of charging stocks; that its products are stable and thus can be stored well ahead of demands.



Licensing Agents for the Houdry Catalytic Cracking Process

E. B. BADGER & SONS CO.

Boston, Mass.

New York Philadelphia San Francisco London Paris

Engineers and Contractors for Petroleum Distillation and Refinery Equipment

PANORAMA photo of Radford Ordnance Works taken during early stages of construction

This new outlet greets the motorist coming into Radford, Va., from the South

motor. "It's no use my looking at it, because we can't get to it for 3 days, we're so loaded down with work."

Still another powder plant official told how he had left his car at a station on his way to work and when he came by that evening to pick it up the station operator said, "Sorry, I didn't get to grease your car today."

"All we got time to do," another dealer commented, "is to slap in the gasoline and send 'em on their way." But to some of the northern officials at the plant it doesn't appear that the stations are too busy during the non-rush hours.

The boom has created a seller's market—but the buyer has to ask to be waited on, it seems.

From the dealer's standpoint, it should be pointed out:

That he has difficulty in getting and keeping competent help with the defense projects needing labor so badly at times that they went a hundred miles and more for workers.

That for years these workers, now drawing defense wages, had scarcely enough money to buy gasoline much less lubrication services and accessories.

That many stations are poorly equipped to lubricate either the new cars or the old jallopies. Modern, high-pressure air equipment is to be found in comparatively few lubritoriums. Some stations have only hand-operated greasing equipment, no compressed air appliances.

On this point, 2 marketers said that their station operators had had cars come in for a grease job which had not been lubricated since the car left the factory. Fittings were "frozen" and had to be replaced. Hand-operated equipment couldn't exert sufficient pressure to force the lubricant into spots where it was so badly needed, so these two marketers said they had had to install compressed air equipment for lubrication work at these stations (they were in small towns).

One of these marketers told of the land-office business done by one of his newly-built stations opening up in a town which up until then had not

NEW STATION at edge of New River Ordnance Works is outlet in New Bern, Va., about 2 miles down the road from Dublin, Va.

even a grease pit and lubrication was done with hand grease guns.

Another marketer, trying to wean his operators away from their gasoline-conscious attitude, says he has better success in pushing one item at a time. When the dealer becomes convinced that he can sell tires—and does—this marketer then starts to educate him on selling batteries. Pushing several items at the start, simply makes the dealer throw up his hands.

One of this marketer's outlets had never sold tires. In March he sold 16 tires and was enthusiastic about his prospects for April. The marketer then worked with him on pushing seat covers and that too, is going over now. Next, he will try other items, singly, but never dropping the sales efforts on lines already started.

Station Housekeeping Suffers

While many station lessees have been able to handle their increased business with the same number of helpers (though some of the replacements were not overly competent), station housekeeping is suffering, according to surveys several marketers have made of their outlets. One marketer said that with his good operators he only went so far as to tactfully point out that a clean, attractive station will

SOME STATIONS in Pulaski, about 15 miles from powder plant, have doubled their gallonage as compared with last year

"Most beautiful tourist camp in the State" is the way residents of Christiansburg, Va., are boasting of the $60,000 project being built by L. L. Roberts, distributor for Standard Oil Co. of N. J. Set in a grove of majestic trees will be a brick, three-bay station; a brick restaurant; and 10 brick cottages, each with 2 separate rooms and 2 separate tile baths, making 20 apartments in all; and 18 garages

THE NEW "EASY REACH" CALCO-METER

HERE'S your answer to the "woman driver" and all others who have a habit of shutting off their engines while their cars are beyond the reach of ordinary pumps!

The beauty of this Gilbarco "Easy Reach" is that it gives you all the advantages of an extension-hose pump—but *none* of the disadvantages.

First of all, for all normal deliveries, it operates just like the standard CALCO-METER "96"... with a normal length of hose which always hangs in a loop on the outside of the pump.

At other times, however, when a customer's car is hard to get at—you simply withdraw an extra length of hose from within the pump-casing. When you've finished, this extra footage retracts *automatically,* by means of a counterweight.

Because of this simple, fool-proof design, the "EASY REACH" has no stuffing boxes to leak, reels to jam or high-tension springs to tire the arms of your operators. It is so easy to use, a child can operate it.

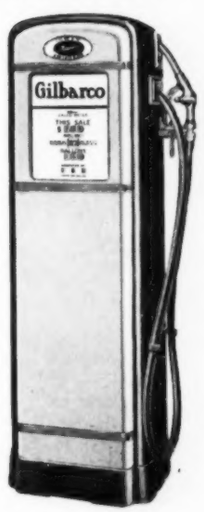
Don't, don't, don't invest in any extension-hose pump until you've seen and operated the new "EASY REACH" CALCO-METER! Write for *Bulletin ER* today!

GILBERT & BARKER MANUFACTURING COMPANY
Springfield, Mass. • Toronto, Ontario, Canada

Gilbert & Barker Mfg. Co.
Springfield, Mass.
Please mail me your illustrated folder, ER, describing the new "EASY REACH" CALCO-METER.

Name _____

Address _____



OUTSTANDING K
DOUBLED V

TYPICAL modern retail outlet, Continental Oil Co., St. Matthew's, Louisville, Ky.

(Below) Another modern retail outlet, Bardstown & Taylorsville Rds., Louisville.

C. E. BAUER, President, Continental Oil Company, Sinclair Distributors, Louisville, Ky.

M. A. BAUER Vice-Pres.

L. J. CONNOLLY Sec'y & Treas.

CONTINENTAL OIL COMPANY
INCORPORATED

LOUISVILLE, KY.

C. E. BAUER.
PRESIDENT

. H. D. Kline
nclair Refining Company
tlanta, Ga.

Dear Mr. Kline:

In looking over the status of our business at year-end I was impressed by some facts and figures which I believe will be of interest to you.

As you know it is now about six years since we began handling the Sinclair line. Previously we had handled our own brands and later we had taken on the line of an important major company. While doing fairly well in both cases, we concluded that it would be very much to our advantage to make a shift to Sinclair.

The reason was that Sinclair had much better representation in our territory and was better known. We can say emphatically our investigations demonstrated that Sinclair products were top quality and as good or better than those we had been distributing.

In the six years since we began with Sinclair our general business has increased fully 200 percent. We did over 5,000,000 gallonage in 1940—the biggest in our history. Our representation is now about 75 dealer outlets in Louisville and in Southern Indiana within a radius of 50 miles. This is a big increase in the retail end of our business.

We have added two new bulk plants and now have plants at LaGrange, Eminence, Carrollton and Louisville, Kentucky. We operate 11 tank trucks which represent another good increase in our supply facilities. And our water terminal at Louisville has been enlarged recently, increasing its capacity over a million gallons.

We were doing a relatively small business in industrial oil and greases six years ago. That end of our business is now large and important largely due to the excellence of Sinclair industrial brands. In fact, this department is constantly expanding.

In giving these facts and figures, I am very glad to state also that our relations with your company have been altogether pleasant and satisfactory. We have been especially pleased with your hands-off policy in this territory, leaving us free to develop it without any sign of competition on your part.

In brief, our experience indicates the value of a Sinclair connection and Sinclair products. We are not backward in recommending Sinclair to distributors looking for a tie-up that offers good business possibilities.

Very truly yours,

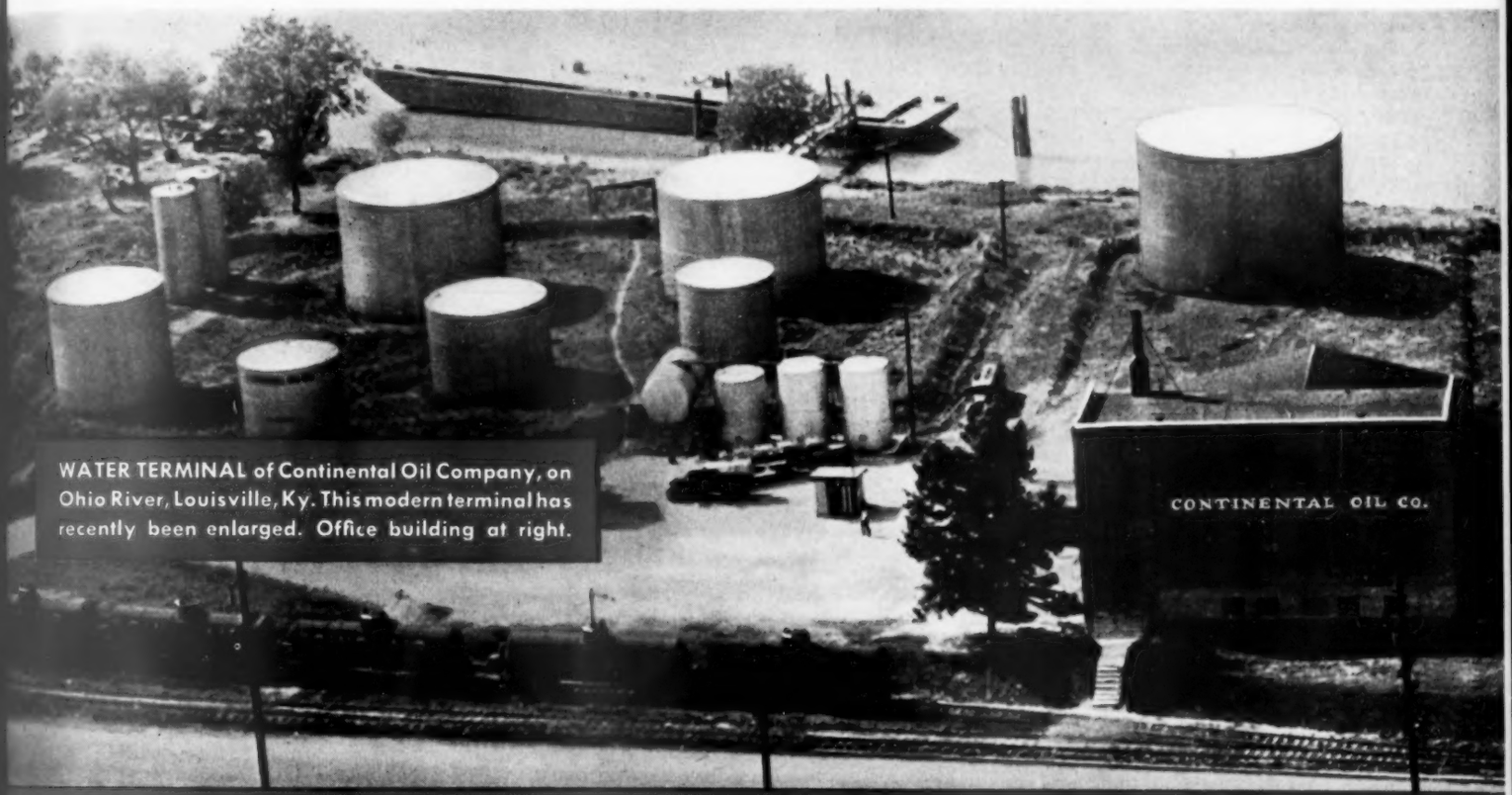
C. E. Bauer

BUSY Dealer Outlet, 3rd & Chestnut, Louisville

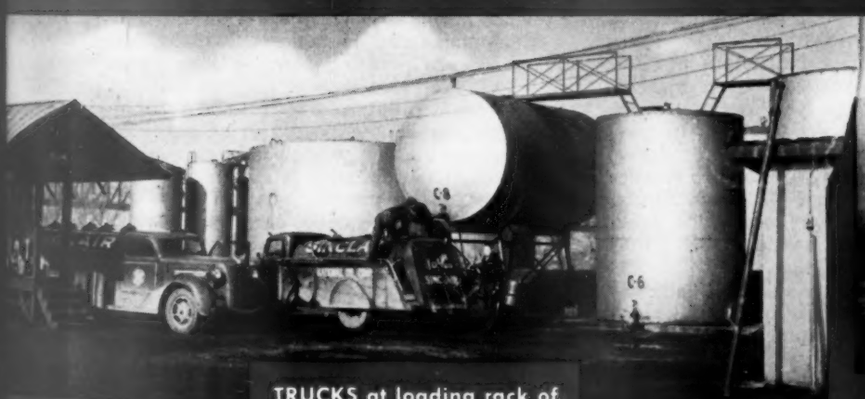
FRANKFORT AVE. retail outlet, Louisville

GARAGE outlet on Taylorsville Road, Louisville, Ky.

KENTUCKY COMPANY
VOLUME WITH SINCLAIR



WATER TERMINAL of Continental Oil Company, on Ohio River, Louisville, Ky. This modern terminal has recently been enlarged. Office building at right.



TRUCKS at loading rack of Company's water terminal

OFFICERS and operating staff of Continental Oil Company. Photographed at water terminal.

ANOTHER fine retail outlet, Barrett and Oak Sts., Louisville

For full particulars about the value of a Sinclair franchise, write the Sinclair office nearest you.

SINCLAIR

SINCLAIR REFINING COMPANY (Inc.) 630 Fifth Avenue, New York, N. Y.

2540 W. Cermak Rd.	573 W. Peachtree St.	1907 Grand Ave.	Fair Building	10 W. 51st St.
CHICAGO	ATLANTA	KANSAS CITY	FT. WORTH	NEW YORK

bring in even more business than they are now enjoying.

But boom-town conditions have made it doubly difficult for station operators to keep the premises clean. In downtown Radford, for example, there are hundreds of loiterers—many are defense workers killing time until they leave for their shift at the munitions projects. There are no public toilets. Many workers use facilities of the service stations. By actual count, 116 persons went into the restrooms of 1 Radford station between 6 and 7:15 P. M.

Most stations in the defense area sell soft drinks and candies. The confection counter brings in lots of pedestrian trade, some of whom loiter about the station. Marketers recognize this but say that many motorists will pass up a station if they don't see a soft-drink cooler. A soft-drink customer is in a relaxed mood and open to sales talks, they point out. To the casual observer, it seems these Virginians must average 5 "cokes" a day.

Station Expansion And Improvement

While some marketers are hesitant about building new stations, they recognize that they will have to spruce up their outlets to compete with the newly-built and revamped stations opening up. And they are doing so, at least to the extent of new pumps, driveways and paint. Their policy is to hold on to what they have and make a profit on it, rather than risk "over-expansion."

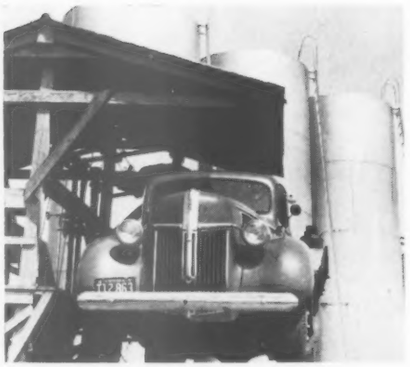
Meanwhile, there are rumors that several marketers are planning to extend their territories, construct new stations, sign up new outlets and perhaps build bulk plants in heart of the defense boom area.

Land prices have stymied some expansion plans. In Radford, for example, several marketers reported that prices on lots they had their eyes on have been hiked to several times normal values. This has been an incentive to some marketers to concentrate on improving their present locations.

One obstacle in Radford to station modernization is the fact that the 3 principal downtown stations—side by side, incidentally—are located on railroad property. They have leases cancellable on 30 days' notice by the railroads. With the Norfolk & Western expanding its trackage at Roanoke to become "one of largest yards in the world," there is some thought that same may be done in Radford. If so, this would wipe out these 3 stations in 30 days. This disquieting prospect discourages any extensive remodeling of these stations.

Several marketers remarked that it seems as if any property owner with a lot on any kind of street or highway in the defense boom area wants to build a "filling station." These projects may range from a substantial structure down to a frame shack costing $500 or so.

Usual procedure, they said is to throw up the building as cheaply and quickly as possible, then try to get an oil company to install pumps and tanks, and maybe a concrete apron at the store's doorstep and some sort of treatment of the "driveways." The property owner then tries to rent the place to the oil company at an exorbitant rental and lease it back at 1c a gal. If the oil company accepts the deal, the storekeeper forgets about the gasoline end of his business and devotes himself to clerking or running a counter restaurant at the location.



FIVE NEW TRUCKS and larger piping throughout were required to keep up with gallonage of this Christiansburg, Va., bulk plant, near Radford Ordnance Works

BRAND-NEW TRUCK of a Christiansburg, Va. distributor which his booming gallonage required him to buy. It was only 3 weeks old when this picture was taken

While most marketers are building their own stations—even some of the country-store type outlets—there are 1 or 2 who are getting the property owner to build lessor-built outlets, as they call them. In some instances, the property owner is able to borrow against the oil company's long-term lease of the station-to-be. Plans for such stations are generally supplied by the company and rigid adherence to specifications is required. Even in such outlets, the equipment is selected by the oil company.

Two "hot spots" for station expansion are the Williamson Road section of Roanoke (Highway 11 leading to the historic Valley Pike up to Winchester, Va.) and the little boom town of Dublin where the bag-loading plant is being constructed (see pictures of station construction). But other station expansion programs are being pushed in towns all over southwestern Virginia.

At Christiansburg, Va., L. L. Roberts, Standard Oil Co. of New Jersey commission distributor, is building a $60,000 tourist camp including a 3-bay brick station and another brick building housing a full-fledged restaurant.

In downtown Roanoke, right across from one of the leading hotels, Paul P. Hunter, Gulf Oil distributor, has just put in a $30,000 diner which he believes is one of the finest in the South. It adjoins his station and there is a large parking lot. For 13 years he has had a diner in this location. He reports that it brings in gasoline trade and that the station attracts customers for the diner. Diner is 16 by 45 ft. and seats 57 people; it is air-conditioned. Tourists, he finds, are usually in a hurry; they want a light meal, served quickly and without "too much fuss."

Data on Defense Projects In Southwestern Virginia

Radford Ordnance Works is a smokeless powder project, costing $44,000,000 and now scheduled for completion on August 28. Output will be 300,000 lbs. of powder daily, or one-half the capacity of the giant plant at Charlestown, Indiana (See NPN, March 5, 1941). Peak of construction employment was reached March 23 when there were 23,150 workers on the job. In mid-April this had declined to about 19,000. At the employment peak, about 26% of the workers came by chartered train from Bluefield, W. Va.; Wytheville, and Roanoke, Va. Virtually all of the rest, or about 70% came by private automobile from distances up to 50 miles and more. Rates charged the workers brought in only about one-half the cost of chartering the train, so the government made up the balance.

When the "permanent" operating force takes over, and the plant goes into operation, it is planned to obtain this operating force from among residents within a 25-mile radius of the project. No trains will be chartered. This means that the sole form of transportation will be private automobile supplemented to some extent by bus service. Operating force will be about 5000. Hercules Powder Co. has contract to build plant and operate it for one year, but it is expected to be operated longer than a year. Hercules subcontracted with Mason & Hanger for the construction job.

Approximately 8000 cars were parked at the plant daily during employment peak in March. No figure is available on parking now but automobile travel is on the increase as the government has cut off several of the chartered trains (there used to be 8 daily, hauling at the maximum about 6000).

New River Ordnance Works is at Dublin, Va., about 8 miles west of Radford. Project is a bag-loading plant and will cost about $14,000,000. Employment in mid-April was about 1400 on the construction job; peak will come in July when total will reach 8000. Operating staff will number about 2500 in completed plant. This type of work is especially suitable for women and it is planned to use as many women as possible, limitation being the number that can be drawn from residents within easy commuting distance (25 miles).

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Project covers approximately 5000 acres.

Besides the Radford and New River ordnance plants, there is a $11,000,000 plant being built by Du Pont at Martinsville, further to the southwest in Virginia, and reportedly will manufacture nylon.

Another munitions plant, to be operated by Triton Chemical Co., Inc. as a project to revitalize T. N. T. that was stored some years ago, is going up at Glen Wilton, Va. Site is about 6 miles from Clifton Forge, Va., home of M. B. Whiting, large independent oil jobber who, as president of the local chamber of commerce, was instrumental in having plant located there.

Press reports of past few days say that Hercules Powder Co. is dickering for a T. N. T. plant site near Clifton Forge and the Du Pont interests are thinking of locating a synthetic rubber plant in that region.

This region of Virginia is rich in coal and water-power resources. It also offers a haven for industries troubled by labor agitators in northern areas. Local chamber of commerce organizations point out that the population is of sturdy American stock, with their Anglo-Saxon origins dating back over 200 years. These native-born workers just won't tolerate labor agitators in their midst and have been known to run them out of town.

The ordnance projects have gone ahead without any signs of labor trouble. Open-shop policy has prevailed. Except for delay in receiving certain vital equipment from the Allis-Chalmers plant—strike-bound for several months—the Radford project would be completed with all machinery installed several months ahead of time.

Petroleum Products Used

Gasoline contract at both the Radford and New River projects was taken over by The Texas Co. as of April 1. Texaco has been awarded the Treasury Procurement Division contract for this area for the April-May-June quarter. Texaco's top price for "regular" gasoline was reported to be 8.6c per gal., tankwagon delivery. This compares with a mid-April tankwagon price of 8.25c. No figures were available as to amounts the Radford and New River projects were taking during April under the procurement division contract.

Prior to the Texaco contract, the Radford project's consumption of petroleum products ran over 400,000 gals. a month. Figures for March are tabulated below.

Radford Ordnance Works' Consumption of Petroleum Products in March

Gasoline	248,082 gals.
Motor oils	23,349 gals.
Grease	43,476 lbs.
Diesel fuels	148,218 gals.
Kerosine	3,434 gals.

Housing Provided in Defense Area

Approximately 400 federally-sponsored homes are to be built in area surrounding the 2 munitions plants. In addition, Mason & Hanger, the contractors, started 100 homes in Radford for officials, but had to call it off when the carpenters were needed at the defense project. Fifty of these 100 homes will be completed when workers are released from the defense project. The other 50 may be built. Radford will get 100 homes to be built by Defense Homes Corp. and, in addition, another 100 Farm Security Administration homes. Still another 100 FSA homes will be built in Pulaski and Montgomery County.

Radford is the guinea pig for a new FSA housing plan. About half of the 200 FSA homes will be built on one-acre tracts leased for 20 years from farmers. Idea is that when the "emergency" is over these homes will be sold back to the farmer at a depreciated price, thus providing "better housing" for the farmer. Incidentally, some farmers have been "riled up" by the proposal and practically ran the Washington officials off their land when the proposal was broached.

New Jobber Builds 3 Stations, Plans 3 More

Newest among oil marketers in southwestern Virginia is David C. Tyrell, former traveling representative for Sun Oil Co., who decided he "wanted to settle down with a business of his own." So, he asked for a jobber's franchise and got the Roanoke area. Sun markets in the Richmond, Va., area but Mr. Tyrell's franchise covers virgin territory.

Entering the area last July, he has in 9 months built himself a bulk plant, acquired a 1500-gal. tank truck (built so that it can be equipped with hose reel and pump for fuel oil service, if he enters that field next winter), built 3 stations and negotiating for sites for 3 more stations.

Two of the stations were completed in April, the other last December. Two stations are all-enamel, one is enamel half way down from top. In advertising the opening of these stations, Mr. Tyrell said they were the first enamel stations in Roanoke and called attention to their cleanliness.

Mr. Tyrell has 18 retail outlets now, seeks more. All but one or two of his outlets are within 10 miles of his bulk plant. His 6 principal outlets are company-owned stations, manned by salaried employes. He gives them his personal supervision and is gratified at the results. Each month his gallonage has shown a gain over the previous month's operations.

He believes that the secret of successful oil marketing is close supervisiion and competent personnel. Just now it is difficult to find good operators, he admits. But rather than "let a poor operator gamble with my investment in the station", he will take over the outlet and operate it directly with salaried men.

Mr. Tyrell pays his men a straight salary and a commission on all sales except gasoline, provided such sales reach $40 a month. In other words, if a station man sells $45 of non-gasoline items he gets a commission on the entire $45. If he sells only $38 worth, he gets no commission.

One of the toughest problems facing a new marketer in a strange territory (Mr. Tyrell is a native of Beaumont, Texas), according to this Sunoco jobber, is the matter of extending credit. Naturally, the new marketer is out to get all the business he can but he is constantly running the risk of being "taken in" by some local dead-beat. Mr. Tyrell handles the problem with a combination of intuition and careful check of the prospect's credit standing. So far, he has held his losses to a very low figure.

Tired of traveling as an oil company representative, David C. Tyrell asked for a franchise and territory where he could set himself up as an independent oil jobber. In 9 months, Mr. Tyrell built a bulk plant, bought a truck and acquired 18 retail outlets including the 3 new stations (shown here, one station being to the rear of Mr. Tyrell and truck) which he has built since December, 1940. He plans to build 3 more. His new stations and 3 outlets are operated by his salaried employes. This is first time that Sunoco products have been sold in Roanoke area

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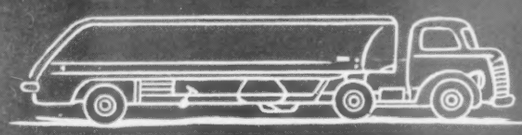

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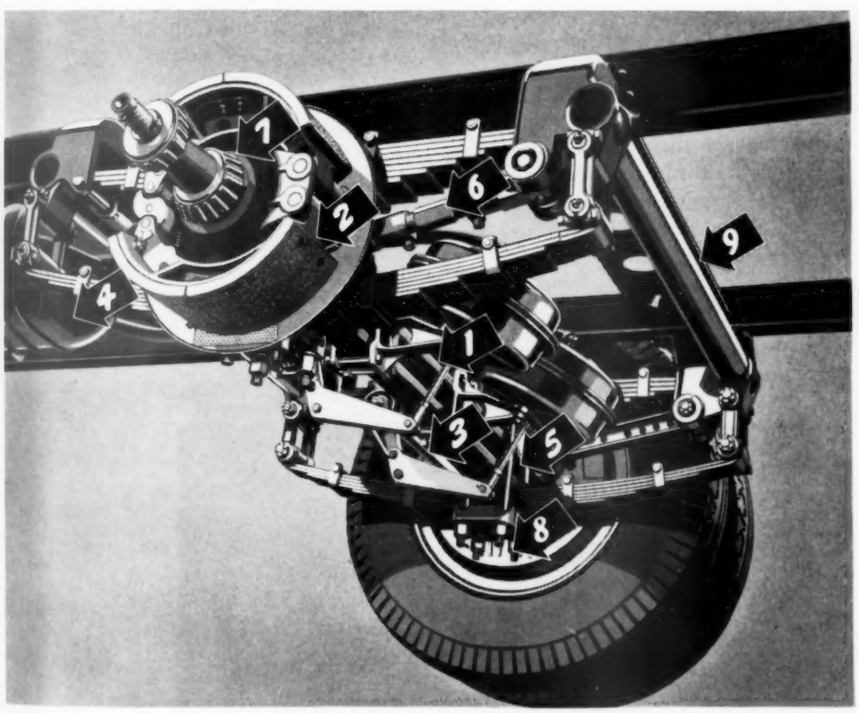

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9. STABILIZER BAR. Across chassis at both front and rear spring hangers.

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Defense Requirements for Lube Oils

By P. M. Robinson†,

Presented at 38th Semi-Annual Meeting, National Petroleum Assn.,
Cleveland, April 25, 1941.

Highlights from the NPA paper "Defense Requirements for Lubricating Oils", by P. M. Robinson, assistant to the Consultant Petroleum Unit, Office of Production Management:

Requirements for lubricants for all government agencies, except aircraft oils for Army Air Corps and special Diesel engine oils, may exceed 475,000 bbls. in 1942. These requirements were approximately 252,000 bbls. for fiscal year 1940.

Requirements of aircraft oils by Army Air Corps may reach 300,000 bbls. by 1942.

Our refining facilities, on the basis of 37,000,000 bbls. production of lubricating oils in 1940, are sufficient to meet all needs of national defense program and other demands.

While it is indicated that present specifications, in the main, will be followed in government purchasing, refiners should bend their efforts towards improving the qualities of lubricants, rather than producing larger volumes.

Chief portions of Mr. Robinson's paper follow:

PURCHASES of lubricating oil by all U. S. government departments and branches throughout the continental U. S., Panama Canal and Hawaiian Islands are made against the Navy contract, with two major exceptions: aircraft oils for the Army Air Corps and special Diesel engine oils.

All governmental agencies purchased against the Navy contract approximately 238,000 bbls. of lubricating oils for the fiscal year 1939, and approximately 252,000 bbls. for the fiscal year 1940. Indications are that purchases may reach as high as 357,000 bbls. for the current fiscal year of 1941. We are of the opinion that purchases of lubricating oils against the Navy contract may exceed 475,000 bbls. for the fiscal year 1942.

To illustrate how this large increase in consumption can take place in such a short time, it has been reported that, around the first of the year 1940, the Army owned 14,000 motor vehicles; around the first of this year approximately 75,000 vehicles, and this number will increase to 190,000 by the end of June and to 286,000 near the end of the year.

These figures are staggering and yet 475,000 bbls. of lubricating oils are only 1.29% of the total production of 1940, and this increase over the amount furnished to the government in 1939 only represents 0.65% of the total production.

One of the major exceptions noted of lubricating oils not purchased on the Navy contract was aircraft oil for the Army Air Corps. Recent testimony before the House Subcommittee investigating the oil industry with Representative Cole of Maryland as Chairman, disclosed the information that the Army Air Corps would consume 100 octane gasoline at the rate of 24,500 bbls. per day at the height of its training program. Rough computations indicate that a training program of such magnitude will consume aviation lubricating oil at the rate of approximately 300,000 bbls. per year.

P. M. Robinson

†Assistant to the Consultant, Petroleum Unit, Office of Production Management.

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This does not mean that such a level of consumption necessarily will be reached during the fiscal year 1942, but that it may well be; consequently, we must set our sights for such an objective. This amount alone is more than the whole Navy contract of fiscal year 1940.

In order to complete the aircraft lubricating oil picture purchases made on the Navy contract must be added to the Army's. During the fiscal year 1940, approximately 36,000 bbls. of aircraft oil were purchased on the Navy contract for use of the Bureau of Aeronautics and other government agencies. The assumption that volumes drawn against the Navy contract will approximately double for fiscal year 1942 over fiscal year 1940, and that all products will increase in somewhat the same ratio indicates that about 72,000 bbls. of aircraft oils will be bought on the Navy contract. If we conclude that the Army's consumption will be in the neighborhood of 238,000 bbls. we arrive at a figure for total consumption of aircraft oils of approximately 285,000 to 310,000 bbls. during the coming fiscal year.

ESTIMATES of the demands for Diesel engine oils are difficult to determine and some have ranged as high as 25,000 bbls., which seems excessive. However, the petroleum industry must be prepared to furnish the amount required and should consumption reach this proportion it seems probable that there is sufficient capacity to fulfill this need.

To summarize, it seems probable that total consumption, including Navy contract, Army Air Corps, and all governmental agencies, may increase to a figure of approximately 830,000 bbls. during the next fiscal year. This represents 2.25% of the total lubricating oils produced during 1940. This is not much over half of the decrease in exports to Europe for the year of 1940 from 1939. When we consider that exports decreased about 1,500,000 bbls. in 1940 from those of 1939, or 4.05% of our total production, caused largely by a total stoppage of exports to Germany and invaded countries, Italy and France, it is clearly apparent that the oil industry will be able to meet our own military demands, plus those of the British Empire, and her allies without jeopardizing our industrial and civilian needs, or putting any undue load on our industry.

It is impossible to predict with any degree of certainty what amounts of lubricating oils will be required for Great Britain and her allies. During 1939, the U. S. exported to the United Kingdom, Canada, Australia and New Zealand 4,133,780 bbls. of lubricating oils and during the year 1940 4,791,698 bbls. or an increase of approximately 16%. And while the war is progressing with increasing tempo, the amount furnished to these nations is contingent on the course of the war, facilities for transportation and other factors more important than an estimate of their needs.

This short discussion gives us an approximation of the quantities that manufacturers of lubricating oils will be called upon to furnish for the armed forces and other government agencies and of their ability to do so. It seems reasonable to conclude that facilities for producing lubricating oils are adequate for the coming year, as probably the 37,000,000 bbls. produced during 1940 did not represent full operating capacity of the whole industry and more could have been produced if necessary. There is attached to this paper as an appendix (see Table 1) a list of the types and quantities of oils furnished on the Navy contract for fiscal year 1940. This is submitted to show the relative amounts of each product normally taken. It is reported that requirements for lubricating oils to be furnished on the Navy contract will be broken down into states for the coming fiscal year, and invitations for bids will cover these areas, rather than on one overall contract.

The second subdivision of the type of questions that need to be answered, related to the qualities of oils which would be demanded and the rest of this paper will be devoted to a discussion of the apparent trends on this matter. There are 24 oils specified on the Navy contract. Detailed specifications for each grade of oil and complete instructions for approval of oils are given in the Bureau of Ships pamphlet entitled, "Lubricating Oil General Information, Requirements and Methods of Test." NDS-431. This pamphlet may be obtained at 5 cents per copy from the Superintendent of Documents, Washington. The appendix shows these different oils.

ACH oil is given a symbol indicating the type of usage recommended and its viscosity at either 130°F or 210°F. To illustrate, symbols beginning with digit 1 signify a high V.I. oil for aviation, automotive or forced feed service; digit 2 signifies a low V.I. oil for forced feed service; digit 3 medium V.I. oil for automotive or forced feed service; digit 4 compounded marine engine oils; digit 5 mineral marine engine, and cylinder oil; digit 6 steam cylinder oil compounded with tallow; digit 7 steam cylinder oils compounded with lard or tallow. The last three digits indicate the average viscosity of the class within which the oil falls at one of the two specified temperatures.

At the request of the War Department two new oils were added to the list at the beginning of fiscal year 1941. These were symbols 1042 and 1047, comparable to S.A.E. Nos. 10W and 20W and have a specification of 100 minimum V.I. The present form of this classification represents years of testing and experience by the Navy with the types of lubricating oils best suited to their purposes. There is little likelihood that there will be any great revisions in its form or specifications in the near future, aside from minor revisions from time to time as the general character of lubricating oils changes. Therefore we may predict with reasonable certainty that all oils, except special Diesel oil, purchased by the Navy and other government agencies who purchase on the Navy contract, will conform to the classification and specifications as outlined in the pamphlet mentioned.

Diesel oils are much discussed in the Army and Navy at the present time. Until recently the Navy's attitude, as reflected in their general specifications requiring straight mineral oils without additions, has been that all equipment furnished should operate on straight mineral oils. The opinion has been expressed on several occasions that, with the judicious use of proper filter equipment, straight mineral oils could give much more satisfactory service in Diesel equipment than most people recognized. However, this attitude has changed somewhat and in January of this year a revised specification for Diesel engine lubricating oils was released indicating that oils with or without the addition of "Additive Agents" would be allowed.

THE requirements of this specification are rather stringent, in that the oil must not only satisfy all the well known requirements for good lubricating oil but must operate satisfactorily in all types of Diesel engines in the Naval service. An additional burden is placed on oils containing additives in that if they should become mixed with straight mineral oil, the mixture must perform as well as the straight mineral oil alone. Oils containing additives must not be adversely affected by the addition of 2% sea water and must show no signs of separation of the additive over the wide range of operating conditions expected to be experienced. Also, the additive oil must show distinct superiority over the straight mineral oil to which the agent has been added. And finally, each new additive oil must be entirely compatible with every other additive oil that has been previously approved. These restrictions are reasonable under all the circumstances but it must be admitted that the burden of proof is placed squarely on the new oils and that a cumulative burden is placed on each subsequent oil submitted after the first is approved.

The Army already has a large number of Diesel engines in operation and at the completion of the expansion program will employ almost every type of automotive and aircraft Diesel engine. It is likely that an approved list of suppliers will be issued immediately and used until a satisfactory specification can be prepared and is-

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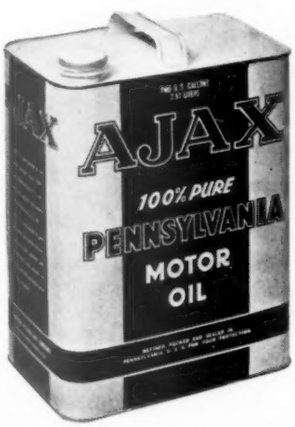

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sued, or until the Navy completes the present program of full scale engine testing. As the Navy requires a full scale engine test for approval, some time will be required to secure the necessary number of approved suppliers for the Navy contract. As a consequence, it seems reasonable to suppose that the Army will release a Diesel engine oil specification of their own in the near future and procure on their own contract.

In order to eliminate the time that would be expended in engine testing each oil, a recommendation has been made that the Army make use of the data that has been gathered by engine manufacturers who conduct engine test programs of their own for approval of oils used in their engines.

It is reported that all manufacturers who furnish Diesel engines to the Army have reached an agreement that oils passing both the Caterpillar and General Motors tests will be suitable in all these engines. Probably the anticipated specification will require that suppliers meet both these tests and an approved list will be made up from the files of these two companies. This is a mere suggestion and cannot be absolutely vouched for but the trend is certainly in this direction. The matter of whether each company can pass these two tests without the use of additives is left to your own good judgment.

The trend in aircraft oils is definitely not toward additives. Both branches of the service seem to feel that the mineral oils received today are giving satisfactory service and that a change in type of oil at the present time might project additional troublesome factors into their already overwhelming problem of expansion. Navy specifications for aircraft oils are shown in the Specification AN-9532 "Lubricating Oils," mentioned before, and are denoted by symbols 1065, 1080, 1100, 1120, 1150. Army specifications are exactly the same as the Navy's except for V.I. and the Navy requirement that oils pass the work factor test. The Navy specifies that all grades shall be of 95 minimum V.I., whereas the Army requires a minimum of 105 for grades 1065 and 1080, and a minimum of 100 for grade 1100. There is little likelihood there will be any appreciable change in these specifications in the next year.

There has been considerable agitation among the several Army divisions and branches for a complete revision and simplification of all specifications for lubricating oils used by the Army. A committee has recently been appointed and authorized to survey the whole situation and make recommendations on this subject. Oils meeting the specifications recommended by this committee will be mandatory for use by all branches of the service.

Discussions with representatives of several branches of the Army indicate that, as far as the qualities of crankcase oils are concerned, Navy specifications will be followed closely in the new Army specifications. There is talk of a reduction in the number of grades considered necessary calling for elimination of S.A.E. 20 and S.A.E. 40, leaving S.A.E. 10W, S.A.E. 30, and S.A.E. 50 as the only grades to be supplied. Some sources have expressed an opinion that 10W is too heavy for some services in extremely low temperatures and that kerosine or gasoline will be added to reduce the viscosity. This has led to considering the advisability of diluting S.A.E. 30 to make S.A.E. 10W, thus eliminating another grade. There is also a hope that an additive can be found that will make an oil suitable to both Diesel and gasoline engines so that the Army would have to carry only grades 30 and 50, providing diluted oil would be satisfactory for the lighter grades. An optimum oil of this type would be of perhaps 95 minimum V.I. However, availability of storage and manufacturing procedure in all districts of the U. S. may require a compromise of 85 minimum V.I.

A similar revision and simplification of specifications will be made for all special oils used by the Army but, as in crankcase oils will consist mainly in a reduction in the number of grades rather than any serious changes in their qualities.

This whole discussion adds up to the following:

There evidently are sufficient facilities for producing lubricating oils of present quality in the United States today to meet the demands of the national defense program; the naval and military branches should be furnished with oils of the highest qualities that it is possible to produce and that specifications for purchases cannot be written for higher quality oils until these oils are generally available. Therefore, the duty of the lubricating oil manufacturer is not to bend his efforts toward the production of more oils of present quality but to strive by every means within his power to produce motor oils which will guarantee the satisfactory operation of every piece of motorized equipment, such as automotive gasoline, automotive Diesel, and aviation gasoline and aviation Diesel, in the armed services of the U. S.

Table 1—Deliveries of Lubricating Oils

Under the Annual Navy Contract for Fiscal Year 1940

(From Appendix with Robinson Paper)

Lubricating oils for all U. S. Government Departments and branches throughout U. S., Panama Canal and Hawaiian Islands are purchased against the Navy contract, except aircraft oils for the Army Air Corps and special Diesel engine oils.

Navy Symbol Number*	Volume Gals.
2075	196,063
2110	436,603
2135	281,775
2190	1,290,059
2250	779,253
Total Forced Feed Oils, Low V. I.	2,983,753
3050	1,113,413
3065	2,319,643
3080	1,255,826
3100	532,165
3120	188,480
Total Forced Feed Oils, Automotive Crankcase Oils, Medium V. I.	5,409,527
1080	289,212
1100	456,197
1120	604,438
1150	61,705
Total Aircraft, Automotive Crankcase oils, High V. I.	1,411,552
4065 Compounded Marine Engine Oils	341,131
5065	46,243
5130	90,751
5190	435,384
Mineral Marine Engine and Cylinder Oils	572,378
6135 Compounded Steam-Cylinder Oils (Tallow)	59,810
7105 Compound Steam-Cylinder Oils (Lard or Tallow)	5,363
8190	13,341
Total Lubricating Oils Under Navy Contract Fiscal Year, 1940	10,796,855 gals.
	257,068 bbls.

*In Navy Symbol Numbers, the first digit indicates the type of usage and the last 3 digits indicate the average viscosity of the class within which the oil falls, at either 130F. or 210F. Symbols beginning with digit 1 signify a high V. I. oil for aviation, automotive or forced feed service; digit 2 signifies a low V. I. oil for forced feed service; 3, a medium V. I. oil for automotive or forced feed service; 4, compounded marine engine oils; 5, mineral marine engine and cylinder oil; 6, steam cylinder oil compounded with tallow; 7, steam cylinder oils compounded with lard or tallow.

Annual Reports

Consolidated Oil Corp.

A reduction in consolidated net income for 1940 of $3,748,278 was reported by Consolidated Oil Corp. to stockholders this week. Income for 1940 was equivalent to 28.02c per share on common capital stock outstanding in the hands of the public, as compared with 54.8c per share in 1939.

Gross additions to capital assets of Consolidated Oil Corp. and subsidiaries in 1940 totaled $29,180,000, or about $9,000,000 more than in 1939, report stated.

"Approximately 147 miles of main pipe lines were completed during the year. The most important addition to the system was the lines constructed in Wyoming to supply our own refinery in that state and to connect common carrier lines owned by others delivering oil to our Kansas City and Chicago refineries from our increased production of crude oil developed in 1940 in Wyoming fields," report said.

Referring to marketing operations of Consolidated Oil Corp. subsidiaries, report said capital expenditures for marketing had been increased. "Such outlays will continue to be necessary not only to maintain our distribution, but to lessen costs of products to point of sale, and place your company on an economic competitive basis," report concluded.

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SHELL

Winter's Contamination of Crankcase Oil Causes Engine Damage in Summer Driving

SMALL diameter oil ducts leading from the crankcase to the main and connecting rod bearings in many cars will not carry enough oil, when it is thickened by sludge and contamination that forms in winter driving, to give proper lubrication to these most important parts of the engine.

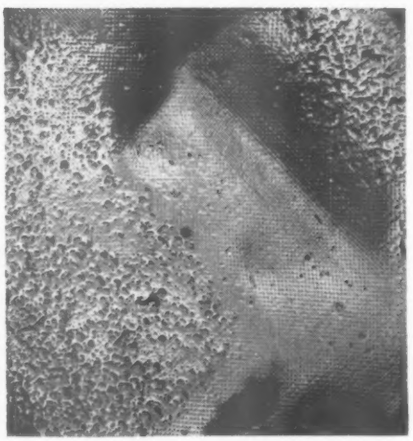
This condition is recognized by lubrication authorities generally as acute in warm weather driving. In summer, the engine starts at once and is almost immediately put into high gear as it needs no warming up. The bearings may be functioning at high loads within 4 or 5 minutes of driving. Sludgy oil, cold in the crankcase, has difficulty in passing freely through these small ducts to reach the bearings before they carry the burden of operating the car in high gear. In many cases, the ducts and screens may be so clogged that oil flow is greatly retarded, preventing the oil from lowering bearing temperatures generated.

In this period before the crankcase is warmed sufficiently to circulate oil properly to the bearings, enough heat may be created to bring about undue wear and eventually lead to early bearing failure. Motorists who have their crankcase drained of the oil containing sludge and contamination caused by winter driving and refilled, have a lubricant which will circulate to the bearings when the crankcase is cold. This avoids a possible source of trouble and perhaps costly repairs.

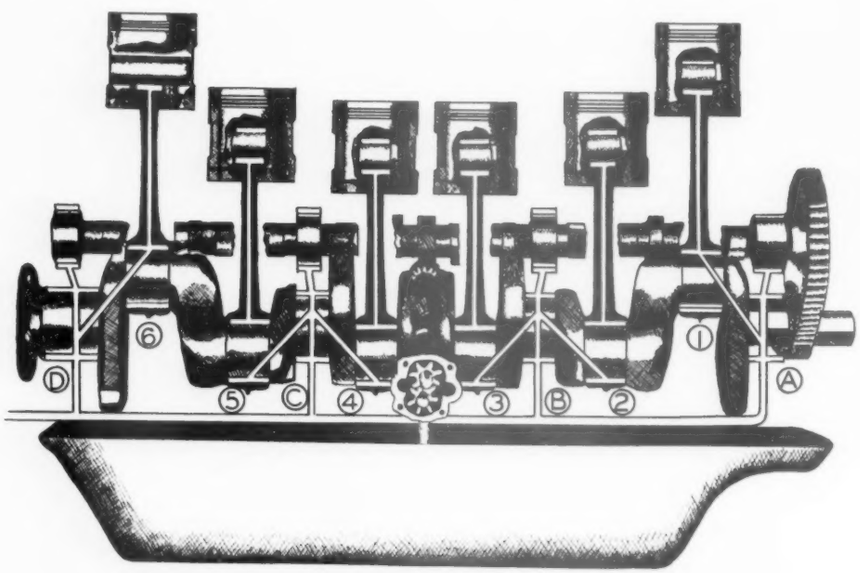
Tests made by an oil company showed the viscosity of crankcase oil increased in some cases 75 to 100% after 4000 miles of winter driving; with a corresponding increase in sludge formation, due to moisture accumulation. This increase in viscosity meant that, if the oil were SAE 10 grade when freshly put into the car, it would be the equivalent of SAE 50 grade, or higher, after this amount of use. No driver would think of putting this heavy an oil in his car for summer driving, SAE 30 grade is as high as any car manufacturer recommends.

These tests on viscosity increase were made after the sludge had settled out of the oil. In actual operations, the sludge itself would get into the oil circulating system, further retarding the rate of flow of the oil through the ducts.

The sketch at left shows the small diameter ducts drilled in the crankcase, through which the oil travels to reach main and connecting rod bearings, in a late model, medium priced car. The dimensions illustrated are typical of those in many cars, both late and earlier models. Some of the smallest diameter passages are not



Accumulation of sludge on the screen in the oil line (above, magnified) retards the flow of lubricant to crankshaft and connecting rod bearings. In present models, full oil flow is needed, from the moment the car is started, to carry away the heat generated by the heavy load on the bearings. Below is the same screen, free of sludge



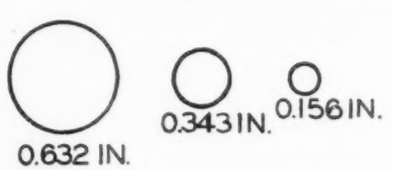


Diagram of bearing lubrication system of '41 model, medium priced car

To reach main bearings (A, B, C, D) oil must flow through ducts drilled in the engine block, varying in length from 12.56 ins. (to reach bearing B) to 24.56 ins. (bearing D); varying in diameter from 0.632 ins. to 0.343 ins.; and pass through 2 fine metal screens, one where the oil is picked up by the pump from the sump and one in the oil line on the discharge side of the pump

Oil is forced to connecting rod bearings (1, 2, 3, 4, 5, 6) from the main bearings. To reach each connecting rod bearing, oil must travel the length of ducts to the main bearing from which it draws a supply; then through 5 ins. additional duct, drilled in the crankshaft, which at one point is 0.156 ins. in diameter

When making a purchase do YOU buy unknown-name products? Of course not! The products you sell may be just as good, or even better than that of some large national distributor—but how is the public to know? Put yourself in the other fellow's place and see what you would do. There IS a lot in a name.

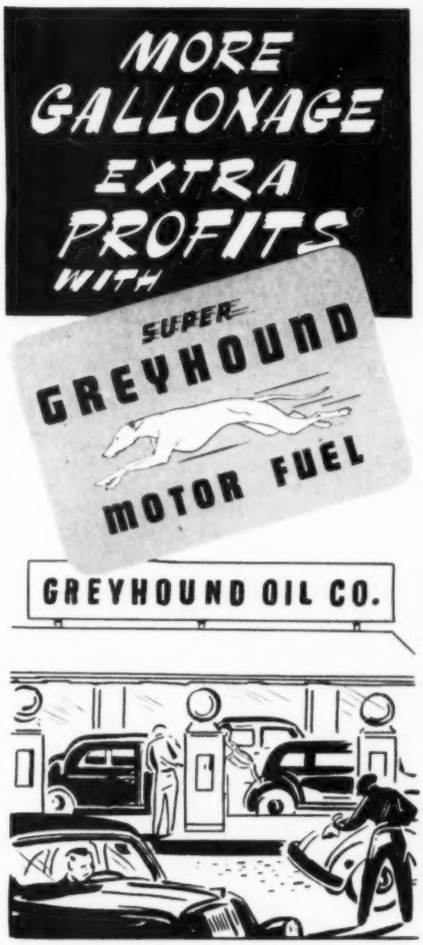
over 0.15 in. This is about half the diameter of an ordinary lead pencil. The lengths of oil ducts to reach one main bearing are about 25 ins.; to reach one connecting rod bearing, 30 ins. In addition, the oil must pass through 2 fine metal screens, one in the sump where the oil is picked up by the pump and one in the oil line, on the discharge side of the pump.

In some cars, the oil, after traveling these lengths of small diameter ducts to the bearings, to lubricate cylinder walls and pistons, must then be forced through a small hole in the lower end of the connecting rod, which meters with the oil hole in the crankshaft once in each revolution of the engine. In other cars, to reach parts connected with the camshaft, where it is necessary to reduce the oil pressure, the oil flow is reduced with a fitting 0.06 in. in diameter. Sludge in oil retards circulation and makes it difficult to lubricate these parts.

IN the case of the automobile engines of the last few years, which operate at higher speeds and develop greater horsepower in the same size engine, some authorities believe the function of the lubricant to carry away the heat that develops in the bearings is more important than to provide a film of oil that keeps the metal surfaces apart. The film of oil between the surfaces will be maintained for some time, even without oil circulation, they say; but, without circulation to remove heat, bearing temperatures may quickly build up to the point damage will result to the surfaces. High temperatures in the bearings, or at other local points also cause deterioration of the lubricant, as well as high temperatures in the crankcase. Chemists have established an increase of 18 to 20 degrees in temperature above a certain point will double the deterioration rate of the lubricant.

That the automotive engineers consider the design of engine lubrication systems that will provide higher rate of circulation of the oil, and possibly external coolers, was suggested by R. J. S. Pigott, Gulf Research & Development Co., Pittsburgh, before the last annual meeting of the Society of Automotive Engineers.

"Since oil is an organic material decomposing around 650 F., and inhibitors cannot change this, but only slow down the rate of breakdown, it seems unwise to continue to disregard the effect of high crankcase temperature due to insufficient cooling, and still higher bearing temperature, due to too small oil flow. These temperatures can be, and for future increased horsepower per inch, will have to be kept down. Unnecessary high temperature is the major factor in present lubrication troubles, and the hurried develop-



When your products are sold under the Greyhound emblem you sell under a well known name—you operate under a nation-wide program that builds and produces business—one affiliated with the Greyhound Bus Operations. You will become a part of a big national organization—yet, keep your independent status. Here's what we have to offer:—

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HEALEY BLDG., ATLANTA, GA.

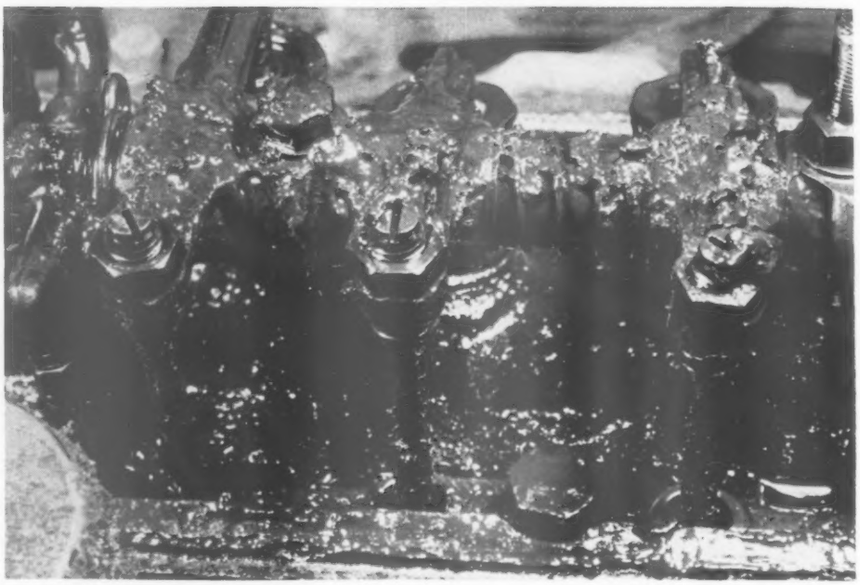
ment of an army of special oils," he said.

In another part of his paper, Mr. Pigott discussed the lubrication problem in the late model cars as follows:

"The lubricating problem involves 2 limits: the mechanical loading, due chiefly to rotative speed and brake mean effective pressure, and thermal loading, due to the same causes, increasing the necessary heat removal rate. Few seem to recognize that increased output has resulted in a greater proportion of cooling being transferred from cooling water to oil.

"Full length jacketing has already been adopted, which yields nearly all the relief that can be expected in this direction. Since the high resistance to heat flow to the jacket water is on the gas side, increasing water circulation does not increase cooling in proportion. Not enough can be done in this direction. As a consequence, the piston is definitely hotter than formerly and, in spite of full length jacketing, more heat reaches the crankcase sides via the cylinder wall and more heat comes down the rod. The rise in crankcase temperatures in many designs of automobile motors during the period considered (1931-41) is a general confirmation of the above conditions.

"The increase in speed and brake mean effective pressure has naturally increased bearing loads, since the bearings cannot ordinarily be increased in size proportionate to output per cubic inch; but probably much more important, the increase of temperature, particularly in the crankcase, has made the situation very hard on any oil.



Extreme effect of sludge in crankcase oil is illustrated in the deposit on the camshaft and valve tappets in a car examined in an oil company laboratory. Similar accumulations were found in the ducts and on other engine parts

"The chemists easily prove to us that an increase of 18 to 20 F. doubles the deterioration rate of any oil. Inhibitors do not alter this condition; they can only postpone the start of serious deterioration, thus lengthening the time before deterioration to an undesirable degree. It is evident that, if sound results are to be obtained, very serious attention must be given to lowering oil temperatures as much toward the lower limit (about 140 to 150) as possible."

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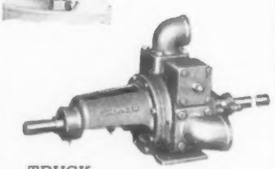

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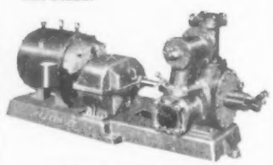


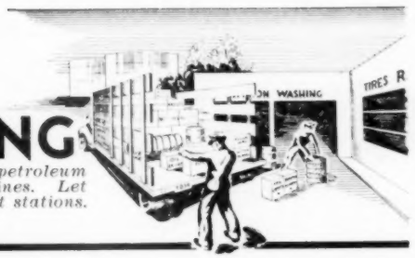
TRANSFER PUMPS
5 to 700 GPM
Single or multiple units.

Washington to Baltimore Super Highway Planned

NEW YORK—Baltimore will be connected with Washington by a $30,000,000 new super highway if Governor O'Connor puts his signature to Maryland SB-282. This measure introduced in the state senate on Feb. 19, has been passed by both branches of the legislature and has just been referred to the Governor for approval.

The new super-highway will embody every known safety device including wide shoulder widths, by-passing of cities, multiple lanes in each direction, center division and grade separations at all intersections with other highways and railroad crossings. Bill authorizes the issuance of revenue bonds payable solely from earnings provided by the collections of tolls, and carries a special clause prohibiting the necessary moneys for construction, repair, and maintenance, from being raised by any other methods. The revenue bonds are to be free from all taxation.

MERCHANDISING



This is a readers' forum on merchandising of petroleum products, automotive accessories and allied lines. Let us have your ideas on how to improve selling at stations. Address: Merchandising Editor, N.P.N.

ALERT marketers are laying up a stock, or contracting for their requirements, of tires for their own equipment and for contemplated truck and passenger car purchases. More rubber than ever, for normal transportation and defense uses, will be required in 1941 and 1942. Synthetics are only a drop in the bucket as yet. War conditions will make shipping more difficult. With only a few months rubber supply on hand, prices are certainly due for an advance.

With hundreds of thousands of motorists who never before came into the tire market, because they traded in their cars each year, another big field is opened for oil marketers in the tire business. Marketers who dropped the tire business, because of price conditions, will probably look on this line in a different light now.

In this connection, we quote from a letter received from P. D. Sweney, president of Sweney Gasoline & Oil Co., Peoria, Ill. His opinion of the future of the independent oil marketer is interesting. He writes:

> "The future of the independent oil marketer depends to quite an extent I think on his ability to sell merchandise other than oil and gasoline. As long as profit from gasoline is as uncertain as it is today, we welcome the chance to expand in the field of various accessories, principally tires."

Soft Drinks

Regardless of wars and rumors of wars, there doesn't seem to be much indication of a shortage in soft drinks. At present we understand the dealer has his choice of some 300 "Cola" drinks alone from which to choose his stock. The "majors" in the soft drink business realize the importance of the oil company's vast market and are talking to dealers in terms of profits, turn-over and so on, rather than vague references to how it helps the "gas" business. Some marketers found that out for themselves long ago. R. J. Porter, of the Porter Oil Co., Sidney, Neb., recently wrote us:

> ". . . In 1928 we stocked each of our stations with ready selling accessories, including tires and tubes. We also put in a stock of cold drinks, paying $125 each for the 'pop' dispensers. The 'pop' season of 4 months paid for the dispensers and showed a net profit of $211.37."

Real Tie In

Standard Oil Co. of New Jersey "gets 'em under the hood" with a bowl attached to the post nearest the gasoline

An extra profit item

...after *12 long years* of BEARING trouble....

Bronze bearings, carrying squeeze rolls heated with circulating oil at about 450°F., were giving lubrication trouble to a Canadian converting paper mill. "Dag" colloidal graphite has solved their high-temperature, high-pressure difficulty - they say, "For the first time in ten or twelve years we have been free from trouble on the bearings in question. We are surpised how long it lasts." ❖ ❖ ❖ "Dag" colloidal graphite blended with the petroleum oil provides the extra lubrication required under extreme conditions. ❖ ❖ ❖ Ask your oil supplier about his colloidal graphited industrial lubricants. Send for Technical Bulletin Number 130. . .

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(Aerial photo of Houston Terminal)

Newest of General American's strategically located rail-water terminals is Galena Park (Port of Houston). With direct pipe line to East Texas fields, spurs from Southern Pacific and Houston Belt Railways, this ultra-modern plant gives all seven exclusive General American advantages—eliminates waste, contamination, shipping delays. Get the facts—see what you *save*.

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GENERAL AMERICAN TANK STORAGE TERMINALS

Geodhope, La. and Westwego, La., (Port of New Orleans)
Corpus Christi, Texas
Carteret, N. J. (Port of New York) Galena Park, Texas (Port of Houston)

A DIVISION OF GENERAL AMERICAN TRANSPORTATION CORPORATION

pump. There is a ball of string in the bowl. Above this is a sign reading "FREE STRING".

"That", says the service man in answer to questions, "is to tie on your finger to remind you that it is time to change oil."

Van Chizzler Gets It Wholesale

We would like to help Ralph Poust of Rockway, N. J., with his problem. Poust's particular grief is an old and sore subject. He is not alone. To quote from his letter:

> ". . . I know many, many large concerns buy thru' their supposedly consumer hook-up and sell to their employes much cheaper than service stations. I am an independent dealer, having approximately 30,000 gals. storage, and sell under my own brand name, but these concerns sell products cheaper than I can buy them."

It seems that Poust took this up with the state and some major companies without getting anywhere. Many individuals and even whole associations have had the same luck. But as far as we know there is no general law against consumers reselling gasoline to whomever they wish at whatever price they care to. It is possible that war conditions will automatically cure this. Perhaps some NPN readers can give us some encouraging words for Poust. To quote from Editor Platt's personal reply to Mr. Poust:

> "It is rough on the jobber and dealer. But I don't think there is any chance to interest the New Deal administration in the plight of the jobber and the dealer, because Thurman Arnold has frankly said that there should be far less jobbers and dealers; and only those survive who can sell at the very lowest possible price."

For Your Supervisors Idea File

E. O. Gottheld, Quincy, Mass., creates much interest at his station with mysterious Chinese characters painted on an ordinary "A" board.

When customers ask what it means, Operator Gottheld explains that in English it means "Change your oil" or some other service or product that he sees the customer needs.

MARKETS

Mid-Continent

TULSA, April 26—Grade 26-70 natural gasoline prices were up 0.25c to 3.125c, FOB Group 3, and up 0.5c to 3c, FOB Breckenridge the past week. Last reported sales prices were 3.125c, FOB Group 3, and 2.75c, FOB Breckenridge. At the end of the week, one seller reported sales of 3 cars at 3.125c, FOB Group 3; another seller reported quoting 3.25c and still another said he had quoted 3.375c. A Texas seller reported quoting 3c, FOB Breckenridge.

Inquiry for 100 cars of 80-82 oct. Ethyl gasoline from a tank car marketer was reported in Oklahoma. Sale of 15 cars of 72-74 oct. gasoline to another refiner for delivery over May was reported by a Kansas refiner. Deal was said to be based on "market price date of shipment, less brokerage."

Demand for refined gasoline against contracts continued heavy throughout the week, according to reports. Most refiners said they were unable to bid on several inter-refinery inquiries in the market and 5 said they were "trying to buy with little success."

Purchases of 15-20 cars of 42-44 w.w. kerosine and 50 cars of No. 1 p.w. fuel from other refiners for shipment over balance of April were reported by an Oklahoma refiner. Another Oklahoma refiner reported buying 10 cars each of Nos. 1 p.w. and 2 straw fuel. Both purchases were made to meet commitments, the refiners said, and prices indicated to be on "market price date of shipment, less brokerage."

Spot sales of 8 cars of No. 6 fuel at 70c were reported by an Oklahoma refiner, who also said he had sold 50 cars of No. 6 for shipment over May. "We had no trouble getting 70c," he added.

Several export inquiries for lubes of 5 to 10,000 bbls. each were reported in the market.

California

LOS ANGELES, April 26.—Quotations on crude and refined products on Pacific Coast petroleum markets for the most part were reported unchanged the past week. As the week closed, a majority of independent refiners in the Los Angeles Basin reported their gasoline prices unchanged following Standard's advance of 0.5c per gal. in its wholesale and retail prices. However, the quantity of third grade gasoline offered at less than 4.75c per gal. was said to be considerably less than in recent weeks. The range of rack prices for leaded and Ethyl at independent plants in the Basin was said to be, respectively, 5.5-6.25c, and 6.75-7.25c.

Burning oils were reported firm in all refining areas of the state. In the Santa Maria district, high sulphur kerosine distillate was said to be quoted at $1.20 per bbl.

Continued shortage of tankers was reported to be the chief cause of inactivity on Pacific Coast export markets. No change was reported in quotations.

Pennsylvania

CLEVELAND, April 26.—Brisk demand for all products was reported by western Pennsylvania refiners the past week. Neutral oils were offered sparingly and bright stock came in for big play toward the end of the week.

Gasoline was up 0.25c to 6.50c in the upper field when the 2 refiners in that district offering for open spot sale reported advancing their quotations. In the lower field, 36-40 fuel oil was up 0.125c to 4.625c and not plentiful at that price, according to reports.

Late in the week, a car of 200 vis. neutral was reported sold inter-refinery at 27c. Prices reported by 5 refiners for limited sale to regular jobber and compounder customers ranged from 24 to 25c. Five cars of 25 pour test bright stock also were reported sold inter-refinery at 15.75c, and refiner-buyers were said to be bidding 16c as the week ended. Quotations reported by refiners to jobbers and compounders ranged from 16 to 17c.

Mid-Western

CHICAGO, April 26.—Demand for all grades of gasoline against contracts was heavy with supplies "tight," according to reports of refiners and tank car marketers in Chicago the past week. Some grades of gasoline were quoted 0.125c higher.

Suppliers also indicated heavy demand for industrial fuels. Supplies were reported "scarce."

Open spot sales reported by 3 tank car marketers during the week were: 2 cars of 80-82 oct. Ethyl gasoline at 5.125c; 12 cars of 72-74 oct. at 4.625c; 2 cars of 63-66 oct. at 4.25c; 1 car of 60 oct. at 3.875c; 1 car of range oil at 3.625c; and 1 car of No. 2 straw fuel at 3c, FOB Group 3.

Group 3 quotations reported by refiners ranged from 5 to 5.375c for 72-74 oct., 4.625 to 4.875c for 63-66 oct., 4.25 to 4.50c for 60 oct. below, 3.375 to 3.50c for No. 2 straw. One refiner reported quoting 3.875c for range oil, and another refiner reported quoting 6c for 80-82 oct. Ethyl.

Group 3 quotations reported by tank car marketers ranged from 4.875 to 5.375c for 80-82 oct., 4.50 to 4.75c for 72-74 oct., 3.875 to 4.375c for 63-66 oct., 3.75 to 4c for 60 oct. below, 3.50 to 3.875c for range oil, and 2.75 to 3.375c for No. 2 straw.

Gulf

NEW YORK, April 26.—Min. 80 oct. ('39 research) gasoline brought 5.75c at the Gulf at the end of the past week when an 80,000-bbl. cargo was reported sold at that price for late May-early June lifting. Quotations reported for this grade at the time ranged from 5.625 to 6c. Earlier in the week a cargo of min. 80 oct. with 2.5 cc. of lead was said to be available at 5.50c.

Three cargoes of 68 oct. unleaded gasoline were said to have sold at 5.625c on April 24, but the sales could not be confirmed. Prior to this report, an inquiry for one cargo of this material for early June lifting was reported.

Unleaded gasolines were priced higher at the end of the week, according to reports here and from the southwest, with 70 oct. reported up 0.25c to 5.75c and both 68 and 60 oct. up 0.125c to 5.625c and 5c respectively.

Inquiries reported during the week were for 2 cargoes of No. 2 fuel for late May coastwise lifting and a cargo of 76 oct., 400 end point gasoline for first half of June.

Atlantic Coast

NEW YORK, April 26.—Higher prices for nearly all refined products at North Atlantic points were reported by suppliers during the week ended April 26. Min. 80 oct. ('39 research) gasoline at New York was reported up 0.85c to 7.10c tank cars and 0.75c to 7c barges. At other northern points this grade was up 0.3c, according to reports, to 7.80c at Albany, 8c at Portland, and 7.90c at Boston and Providence.

Low quotations for both 72-74 and 68-70 oct. gasolines at New York were reported up 0.25c to 6.50c tank cars, and 6.25c barges. Advances of 0.125 to 0.375c in these grades at southern and central seaboard points also were reported.

Kerosine was reported 0.2c higher at New York, at 5.20c tank cars, and 5.10c barges.

Nos. 2 and 3 fuel oils also were priced higher at New York during the week, up 0.2c tank cars to 4.70c and 0.1c barges to 4.60c. At Portland, Boston, and Providence, light fuel oils were up 0.1c, according to suppliers' reports.

REFINERY and SEABOARD PRICES

In bulk lots by Motor Transport, Tank Car, Barge or Tanker as shown

(NOTE—Parenthetical figures after prices indicate number of companies quoting when less than three companies are quoting.)

HOW PRICES ARE REPORTED—

Refinery and Seaboard prices in National Petroleum News are gathered by PLATT'S OILGRAM and are as published in the Monday issue of the OILGRAM.

PLATT'S OILGRAM is a reporting service issued in three identical editions daily from News Bureaus at New York, Cleveland, and Tulsa, Okla. PLATT'S OILGRAM gathers and publishes what its publisher and representatives believe to be accurate news of sales, prices and current happenings affecting the oil industry and that will be of interest to its subscribers. As this information is usually private, OILGRAM reports it according to what it is able to obtain from sources deemed reliable.

All information is supplied without guarantee as to its completeness, accuracy time of transmission or promptness of delivery.

The subscriber receives this information for his private use and not for resale or further distribution.

Publisher reserves the right to change the extent, nature and form of showing this information at any time.

Prices shown in the tables are quotations (meaning sellers' general offers or posted prices), or actual sales prices, reported to OILGRAM by refiners for "open spot" transactions, except as otherwise specified.

Prices arrived at by discounts off a specified price or "market date of shipment," prices named in contracts or prices arrived at in accordance with any arrangement made prior to date of sale, are not for "open spot" transactions and therefore are not considered in making the price tables. Prices made to brokers and prices in "Inter-refinery" transactions are also not considered except as may be noted.

All prices are for "immediate" shipment except in Gulf Coast bulk transactions where shipment is generally to be made in ninety days. Prices are FOB refineries, pipelines, or tanker terminals in districts designated.

Prices shown are for quantities in bulk such as tank car lots, motor transport lots or barge lots; and in cents per gallon; heavy fuel oils are in dollars per barrel of 42 U.S. gallons; wax and petrolatums are in cents per pound. Prices applying to barges or cargoes only are so designated.

Prices do not include taxes or inspection fees. Prices are published at the close of the business day.

Mid-Western prices in the tables were gathered from refiners with offices located in Chicago and the surrounding territory. While the prices are quoted on a Group 3 (Oklahoma) freight basis, this is in accordance with the custom of the oil industry which uses Group 3 as a price basis for the ease of comparing prices even when the material originates in another refining district. Other refinery prices are given by and for the particular refining district where the material is made and from which it is shipped.

When prices obtained by OILGRAM do not conform to these conditions the exception and the new conditions are noted in the news lead or in conjunction with the price table by footnote or otherwise, for the particular refinery or sales district involved.

Crude oil and products covered by OILGRAM'S news and price service, except where noted, have been represented to the publisher as fully up to the customary trade specifications indicated and according to the generally accepted methods of test; and all crude oil and all products thereof as having been lawfully produced and transported.

Any apparent error should be reported to the nearest OILGRAM or National Petroleum News office at once as no correction will be made after the second issue of the OILGRAM or National Petroleum News following its publication.

Summary of Daily Gasoline Prices (Apr. 22 to Apr. 28)

	Latest Prices Monday, Apr. 28	Friday, Apr. 25	Thursday, Apr. 24	Wednesday, Apr. 23	Tuesday, Apr. 22
U. S. Motor, (ASTM octane)					
80-82 octane Ethyl:					
Oklahoma	5.50 – 6.125	5.50 – 6.125	5.50 – 6.125	5.50 – 6.125	5.50 – 6.125
Mid-Western (Group 3 basis)	6.00 (1)	6.00 (1)	6.00 (1)	6.00 (1)	6.00 (1)
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	6.00 (2)	6.00 (2)	6.00 (2)	6.00 (2)	6.00 (2)
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	6.125 (1)	6.125 (1)	6.125 (1)	6.125 (1)	6.125 (1)
72-74 octane:					
Oklahoma	5.00 – 5.375	5.00 – 5.375	5.00 – 5.375	5.00 – 5.375	5.00 – 5.375
Mid-Western (Group 3 basis)	5.00 – 5.375	5.00 – 5.375	5.00 – 5.375	5.00 – 5.375	5.00 – 5.375
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	5.00 – 5.625	5.00 – 5.625	5.00 – 5.625	5.00 – 5.625	5.00 – 5.625
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	5.00–5.125 (2)	5.00–5.125 (2)	5.00–5.125 (2)	5.00–5.125 (2)	5.00–5.125 (2)
63-66 octane:					
Oklahoma	4.625– 5.00	4.625– 4.875	4.625– 4.875	4.625– 4.875	4.625– 4.875
Mid-Western (Group 3 basis)	4.625– 5.00	4.625– 4.875	4.625– 4.875	4.625– 4.875	4.625– 4.875
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	4.625– 5.25	4.625– 5.25	4.50 – 5.25	4.50 – 5.25	4.50 – 5.25
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	4.625 (2)	4.625 (2)	4.625 (2)	4.625 (2)	4.625 (2)
60 octane & below:					
Oklahoma	4.25 – 4.625	4.25 – 4.50	4.25 – 4.50	4.25 – 4.50	4.25 – 4.50
Mid-Western (Group 3 basis)	4.25 – 4.625	4.25 – 4.50	4.25 – 4.50	4.25 – 4.50	4.25 – 4.50
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	4.25 – 4.75	4.25 – 4.75	4.125– 4.75	4.125– 4.75	4.125– 4.75
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	4.125–4.25 (2)	4.125–4.25 (2)	4.125–4.25 (2)	4.125–4.25 (2)	4.125–4.25 (2)
Motor Gasoline, 72-74 octane (ASTM)					
New York harbor	7.00	6.50 – 7.00	6.50 – 7.00	6.50 – 7.00	6.50 – 7.00
New York harbor, barges	6.75 – 7.00	6.25 – 6.75	6.25 – 6.75	6.25 – 6.75	6.25 – 6.75
Philadelphia district	6.25 – 6.50	6.25 – 6.50	6.25 – 6.50	6.25 – 6.50	6.25 – 6.375
Baltimore district	6.25–6.50 (2)	6.25–6.50 (2)	6.25–6.50 (2)	6.25–6.50 (2)	6.25–6.375 (2)
Motor Gasoline:					
74-76 Octane: (L-3)					
Bradford-Warren (Western Penna.)	6.50 (2)	6.50 (2)	6.50 (2)	6.25–6.50 (2)	6.25–6.50 (2)
Other Districts (Western Penna.)	6.00 – 6.25	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00

REFINERY PRICES

Gasoline—U. S. Motor (ASTM Octane) except where otherwise specified

Prices Effective	Apr. 28	Apr. 21
OKLAHOMA		
80-82 oct. Ethyl	5.50 – 6.125	5.50 – 6.125
72-74 oct.	5.00 – 5.375	5.00 – 5.375
63-66 oct.	4.625– 5.00	4.625– 4.875
60 oct. & below	4.25 – 4.625	4.25 – 4.50
60-62 400 e.p.	4.125–4.375 (2)	4.125–4.375 (2)
MID-WESTERN (Group 3 basis)		
80-82 oct. Ethyl	6.00 (1)	6.00 (1)
72-74 oct.	5.00 – 5.375	5.00 – 5.375
63-66 oct.	4.625– 5.00	4.50 – 4.875
60 oct. & below	4.25 – 4.625	4.25 – 4.50
N. TEX. (For shpt. to Tex. & N. M. dest'ns.)		
80-82 oct. Ethyl	6.00 (2)	6.00(2)
72-74 oct.	5.00 – 5.625	5.00 – 5.625
63-66 oct.	4.625– 5.25	4.50 – 5.25
60 oct. & below	4.25 – 4.75	4.125– 4.75
60-62, 400 e.p.	4.25–4.75 (2)	4.25–4.75(2)
W. TEX. (For shpt. to Tex. & N. M. dest'ns.)		
80-82 oct. Ethyl	6.125 (1)	6.125 (1)
72-74 oct.	5.00–5.125 (2)	5.00–5.125 (2)
63-66 oct.	4.625 (2)	4.625 (2)
60 oct. & below	4.125–4.25 (2)	4.125–4.25 (2)
CENT. W. TEX. (Prices to truck transports)		
80 oct. & above	6.00 (1)	6.00(1)
72-74 oct.	5.00 (1)	5.00 (1)
67-69 oct.	4.50 (1)	4.50 (1)
62 oct. & below	4.125 (1)	4.125(1)
AMARILLO, TEX. (For shpt. to W. Okla. & Tex. differential territory.)		
60 oct. & below	4.625–4.75 (2)	4.625–4.75(2)
60-62, 400 e.p.	4.875 (1)	4.875 (1)

Prices Effective	Apr. 28	Apr. 21
KANSAS (For Kansas destinations only)		
80-82 oct. Ethyl	6.25 (1)	6.25 (1)
72-74 oct.	5.25 – 5.375	5.25 – 5.375
63-66 oct.	4.875– 5.00	4.875– 5.00
60 oct. & below	4.375– 4.625	4.375– 4.625
ARK. (For shipment to Ark. & La.)		
72-74 oct.	5.00 (1)	5.00'(1)
70-72 oct.	4.875 (1)	4.875 (1)
60 oct. & below	4.50 (1)	4.50(1)
WESTERN PENNA. (Motor gasoline.)		
Bradford-Warren:		
74-76 oct. (L-3)	6.50 (2)	6.25–6.50 (2)
Other districts:		
74-76 oct. (L-3)	6.00 – 6.25	5.75 – 6.00
CENTRAL MICHIGAN (FOB Central Mich. refinery group basis for shpt. within Mich.; shpts. may originate at plants outside Central group)		
U.S. Motor: (Oct. L-3):		
72-74 oct.	7.25	7.25
67-69 oct.	6.50 – 6.75	6.50 – 6.75
Str. run gasoline, excluding Detroit shpt.	5.25 – 5.50	5.00 – 5.50
OHIO (S. O. Ohio quotations for statewide delivery and subject to exceptions for local price disturbances)		
72-74 oct.	7.50	7.50
CALIFORNIA U.S. Motor:		
58-61 grav., 375-400 e.p., 65 oct. & above	5.50 – 6.50	5.50 – 6.50
54-58 grav., for outside state shipment	4.75 – 5.50	4.75 – 5.50
54-58 grav., for instate shipment	4.75 – 5.00	4.50 – 5.00

Kerosine, Gas & Fuel Oils

Prices Effective	Apr. 28	Apr. 21
OKLAHOMA		
41-43 grav. w.w.	4.00 – 4.50	4.00 – 4.50
42-44 grav., w.w.	4.25 – 4.625	4.25 – 4.625
Range Oil	3.875– 4.125	3.875– 4.125
No. 1 P.W.	3.75 – 4.125	3.75 – 4.125
No. 1 straw	3.375–3.75 (2)	3.375–3.75 (2)
No. 2 straw	3.375– 3.625	3.375– 3.625
No. 2 dark	3.25 (1)	3.25 (1)
U.G.I. gas oil	3.25 (2)	3.25(2)
No. 3 fuel	3.25 – 3.375	3.25 – 3.375
No. 6 fuel	$0.70 (2)	$0.70 (1)
14-16 fuel	$0.85–$0.90 (2)	$0.85–$0.90(2)
MID-WESTERN (Group 3 basis)		
41-43 grav. w.w.	4.125– 4.50	4.125– 4.50
42-44 grav. w.w.	4.25 – 4.625	4.25 – 4.625
Range Oil	3.875 (1)	3.875(1)
No. 1 p.w.	3.75 – 4.00	3.75 – 4.00
No. 2 straw	3.375– 3.50	3.375– 3.50
No. 3	3.25 – 3.375	3.25 – 3.375
No. 5	$0.75–$0.85 (2)	$0.75–$0.85(2)
No. 6	$0.70–$0.75 (2)	$0.70–$0.75 (2)
N. TEX. (For shpt. to Tex. & N. M. dest'ns.)		
41-43 grav. w.w.	4.00 – 4.75	4.00 – 4.75
No. 1 P.W.	3.875 (1)	3.875 (1)
AMARILLO, TEX. (For shpt. to W. Okla. & Tex. differential territory.)		
41-43 grav. w.w.	4.625–4.75 (2)	4.625–4.75 (2)
No. 1 straw	4.00 (2)	4.00(2)
KANSAS (For Kansas destinations only)		
41-43 grav. w.w.	4.25 (1)	4.25 (1)
42-44 gravity w.w.	4.375–4.625	4.375– 4.625
No. 1 p.w.	3.875–4.125 (2)	3.875–4.125 (2)
No. 6 fuel	$0.675–$0.80 (2)	$0.675–$0.80(2)

REFINERY PRICES (Continued)

(NOTE—Parenthetical figures after prices indicate number of companies quoting when less than three companies are quoting.)

Kerosine, Gas & Fuel Oil

(Continued)

Prices Effective	Apr. 28	Apr. 21
ARK. (For shipment to Ark. and La.)		
41-43 grav. w.w.	4.375 (1)	4.375 (1)
No. 1	3.875 (1)	3.875 (1)
No. 2	3.375 (1)	3.375 (1)
No. 3 fuel	3.25 (1)	3.25 (1)
Tractor fuel, for shpt to Ark. points only	4.50 (1)	4.50 (1)
WESTERN PENNA.		
Bradford-Warren:		
45 grav. w.w.	5.25 – 5.50	5.25 – 5.50
46 grav. w.w.	5.625 (1)	5.625 (1)
No. 1 fuel	5.125– 5.50	5.125– 5.50
No. 2 "	5.00–5.50 (2)	5.00–5.50 (2)
No. 3 "	5.50 (1)	5.50 (1)
36-40 gravity	5.25 (1)	4.75–5.25 (2)
Other districts:		
45 grav. w.w.	5.125– 5.25	5.125– 5.25
46 grav. w.w.	5.25 – 5.375	5.25 – 5.375
47 grav. w.w.	5.375–5.625	5.375– 5.625
No. 1 fuel	4.875– 5.00	4.875– 5.00
No. 2 "	4.875– 5.00	4.875– 5.00
No. 3 "	4.75–4.875 (2)	4.75–4.875 (2)
36-40 grav., Pittsburgh dist. prices excluded	4.625	4.50 – 4.625
CENTRAL MICHIGAN (FOB Central Mich. refinery group basis for shpt. within Mich.; shpts. may originate at plants outside Central group.)		
47-49 gravity w.w.	5.50 – 5.75	5.50 – 5.75
P.W. Distillate	5.50	5.50
No. 3 gas oil, Straw	5.00 – 5.25	5.00 – 5.25
U.G.I. gas oil	4.25 – 4.50	4.25 – 4.50
Fuel Oils (Vis. at 100)		
300-500 Vis.	4.00 (2)	4.00 (2)
100-300 Vis.	4.375 (1)	4.375 (1)
OHIO (S. O. Ohio quotations for statewide delivery)		
Kerosine	6.00	5.875
CALIFORNIA		
40-43 grav. w.w.	4.50 – 6.00	4.50 – 6.00
San Joaquin Valley:		
Heavy fuel	$0.575–$0.65	$0.575–$0.65
Light fuel	$0.65 –$0.75	$0.65 –$0.75
Diesel fuel	3.00 – 4.00	3.00 – 4.00
Stove dist.	3.00 – 4.00	3.00 – 4.00
Los Angeles:		
Heavy fuel	$0.575–$0.65	$0.575–$0.65
Light fuel	$0.65 –$0.75	$0.65 –$0.75
Diesel fuel	2.75 – 4.00	2.75 – 4.00
Stove dist.	2.75 – 4.00	2.75 – 4.00
San Francisco:		
Heavy fuel	$0.80	$0.80
Light fuel	$0.90	$0.90
Diesel fuel	4.50	4.50
Stove dist.	5.50	5.50

Note: All above heavy fuels meet Pacific specification 400; light fuel, spec. 300; Diesel fuels, spec. 200; and stove distillate, spec. 100.

Lubricating Oils

WESTERN PENNA.

Prices were given by Penna. refiners as their quotations to jobbers & compounders only. Neutral prices were reported by refiners as for limited sale to their regular customers only.

Viscous Neutrals—No. 3 col. Vis. at 70° F		
200 Vis. (180 at 100°) 420-425 fl.		
0 p.t.	28.50 (1)	28.50 (1)
10 p.t.	27.50 (1)	27.50 (1)
15 p.t.	26.50 (1)	26.50 (1)
25 p.t.	24.00 –25.00	24.00–25.00
158 Vis. (143 at 100) 400-405 fl.		
0 p.t.	26.50 (1)	26.50 (1)
10 p.t.	25.50 (1)	25.50 (1)
15 p.t.	24.50 (1)	24.50 (1)
25 p.t.	22.00 –23.00	22.00 –23.00
Cylinder Stocks		
Brt. stk., 145-155 vis. at 210°, 540-550 fl., No. 8 col.		
10 p.t.	19.50 (1)	18.50 (1)
15 p.t.	18.50 (1)	17.50 (1)
25 p.t.	16.00 –17.00	16.00 –17.00
600 S.R. filterable	9.50 –11.00	9.50 –11.00
650 S.R.	9.50 –13.00	9.50 –13.00
600fl	10.00 –10.50	10.00 –10.50
630fl	11.00 –12.00	11.00 –12.00
MID-CONTINENT (F.o.b. Tulsa)		
Neutral Oils (Vis. at 100° F. 0 to 10 P.P.)		
Pale Oils:		
Vis. Color		
60-85—No. 2	5.50 – 5.75	5.50 – 5.75
86-110—No. 2	5.50 – 6.25	5.50 – 6.25
150—No. 3	8.00 –10.25	8.00 –10.25
180—No. 3	9.00 –10.50	9.00 –10.50
200—No. 3	9.00 –11.00	9.00 –11.00
250—No. 3	10.50 –12.00	10.50 –12.00
280—No. 3	11.00 –13.75	11.00 –13.75
300—No. 3	12.00 –14.25	12.00 –14.25

Lubricating Oils (Cont'd)

Prices Effective	Apr. 28	Apr. 21
Red Oils:		
180—No. 5	9.00 (1)	9.00 (1)
200—No. 5	9.00–11.00 (2)	9.00–11.00 (2)
280—No. 5	12.50 (1)	12.50 (1)
300—No. 5	11.50 –13.00	11.50 –13.00

Note: Viscous Neutrals, 15-25 p.p. generally are quoted 0.5c under 0-10 p.p. oils. Non-viscous oils, 15-25 p.p., generally are quoted 0.25c under 0-10 p.p. oils.

Bright Stock—Vis. at 210°		
200 Vis. D	19.00 (1)	19.00 (1)
150-160 Vis. D:		
0 to 10 p.p.	14.50 –16.00	14.50 –16.00
10 to 25 p.p.	14.00 –15.50	14.00 –15.50
25 to 40 p.p.	13.50–15.00 (2)	13.50–15.00 (2)
150–160 vis. E	13.50 –15.00	13.50 –15.00
120 Vis. D:		
0 to 10 p.p.	13.50 –15.25	13.50 –15.25
600 S.R. Dark Green	7.00 (2)	7.00 (2)
600 S.R. Olive Green	8.00 – 9.50	8.00 – 9.50
631 S.R.	12.00 (1)	12.00 (1)
Black Oil	4.00–5.50 (2)	4.00–5.50 (2)

SOUTH TEXAS Neutral Oils

Vis. Color		
Pale Oils: (*Vis. at 100°F*)		
100 No. 1½-2½	5.25 – 5.50	5.25 – 5.50
200 No. 2-3	7.25	7.25
300 No. 2-3	7.75	7.75
500 No. 2½-3½	8.50	8.50
750 No. 3-4	8.75	8.75
1200 No .3-4	8.875	8.875
2000 No. 4	9.00	9.00
Red Oils:		
100 No. 5-6	5.25–5.50 (2)	5.25–5.50 (2)
200 No. 5-6	7.25	7.25
300 No. 5-6	7.75	7.75
500 No. 5-6	8.50	8.50
750 No. 5-6	8.75	8.75
1200 No. 5-6	8.875	8.875
2000 No. 5-6	9.00	9.00

CHICAGO (From Mid-Continent p.l. crude.)
Neutral Oils (Vis. at 100° F. 0 to 10 p.p.)

Pale Oils		
Vis. Color		
60-85—No. 2	7.25 (1)	7.25 (1)
86-110—No. 2	7.25 (1)	7.25 (1)
150—No. 3	9.00 (1)	9.00 (1)
180—No. 3	10.00 (1)	10.00 (1)
200—No. 3	10.00 (1)	10.00 (1)
250—No. 3	11.50 (1)	11.50 (1)
Red Oils:		
180—No. 5	10.00 (1)	10.00 (1)
200—No. 5	10.00 (1)	10.00 (1)
250—No. 5	11.00 (1)	11.00 (1)
280—No. 5	12.00 (1)	12.00 (1)
300—No. 5	12.50 (1)	12.50 (1)

Note: Viscous oils, 15 to 30 p.p. are quoted 0.5c lower; 60-85 and 86-110 No. 2 non-viscous oils, 15 to 30 p.p., 0.25c lower.

Unfiltered Steam Refined: (Viscosity at 210°)		
140	8.75 (1)	8.75 (1)
160	9.50 (1)	9.50 (1)
200	10.50 (1)	10.50 (1)
Bright stocks, 160 vis. at 210, No. 8 color:		
0 to 10 p.p.	16.00 (1)	16.00 (1)
15 to 25 p.p.	15.50 (1)	15.50 (1)
30 to 40 p.p.	14.50 (1)	14.50 (1)
E filtered Cyl. Stock	12.50 (1)	12.50 (1)

Note: To obtain prices delivered in Chicago, add 0.25c per gal.

Natural Gasoline

(Group 3 & Breckenridge prices are to blenders on freight basis shown below. Shipments may originate in any Mid-Continent manufacturing district.)

FOB GROUP 3				
Grade 26-70	3.125 (Sales)		3.00 (Sales)	
FOB BRECKENRIDGE				
Grade 26-70	3.00 (Qtns.)		2.75 (Qtns.)	
CALIFORNIA (FOB plants in Los Angeles basin)				
75-85, 350-375 e.p. for blending	4.375– 4.625		4.375– 4.625	

Naphtha and Solvent

Prices Effective	Apr. 28	Apr. 21
(FOB Group 3)		
Stoddard solvent	5.875– 6.25	5.875– 6.25
Cleaners' naphtha	6.375– 6.75	6.375– 6.75
V. M. & P. naphtha	6.375– 6.75	6.375– 6.75
Mineral spirits	5.375– 5.75	5.375– 5.75
Rubber solvent	6.375– 6.75	6.375– 6.75
Lacquer diluent	6.625– 7.75	6.625– 7.75
Benzol Diluent	7.875– 8.75	7.875– 8.75
WESTERN PENNA		
Untreated naphtha	5.75 – 6.00	5.75 – 6.00
Stoddard solvent	6.00 – 6.25	6.00 – 6.25
OHIO (S. O. Ohio quotations for statewide delivery):		
V.M.&P. naphtha, D.C. naphtha, Special Varnolene, Varnolene & Sohio solvent	8.75	8.75
Rubber solvent	8.25	8.25

Wax

White Crude Scale:

WESTERN PENNA. (Bbls. C.L., N. Y.)		
122-124 A.m.p.	3.25 – 3.50	3.25 – 3.50
124-126 A.m.p.	3.25 – 3.50	3.25 – 3.50
OKLAHOMA (Bbls. or burlap bags, C.L.)		
124-6 AMP	3.375 (1)	3.375 (1)
131-3 AMP	3.50 (1)	3.50 (1)

CHICAGO (FOB Chicago district refinery of one refiner, in bags or slabs loose, carloads. Melting points are EMP (ASTM) methods: add 3° F. to convert into AMP.)

Fully refined:		
122-124 (bags only)	5.60	5.60
125-127	5.60	5.60
127-129	5.85	5.85
130-132	6.15	6.15
132-134	6.40	6.40
135-137	7.15	7.15

Petrolatums

WESTERN PENNA. (Bbls., carloads; tank cars, 0.5c per lb. less.)		
Snow White	5.375– 6.375	5.375– 6.375
Lily White	4.625– 5.375	4.625– 5.375
Cream White	3.875– 4.375	3.875– 4.375
Light Amber	2.875– 3.50	2.875– 3.50
Amber	2.625– 3.125	2.625– 3.125
Red	2.375– 3.00	2.375– 3.00

Group 3 Freight Rates

To Division Headquarters Points of Standard Oil Co. of Indiana

	Gasoline Kerosine Cents per Cwt.	Gasoline Kerosine Cents per gal. 6.6 lbs.	Distillate-Gas Oil-Fuel Oil Cents per Cwt.	Distillate-Gas Oil-Fuel Oil Cents per gal. 7.4 lbs.
Chicago, Ill.	40	2.640	32	2.368
Decatur, Ill.	39	2.574	31	2.294
Joliet, Ill.	40	2.640	32	2.368
Peoria, Ill.	39	2.574	31	2.294
Quincy, Ill.	36	2.376	29	2.146
Indianapolis, Ind.	48	3.168	39	2.886
Evansville, Ind.	46	3.036	37	2.738
South Bend, Ind.	49	3.234	**42	**3.108
Detroit, Mich.	64	4.224	51	3.774
Grand Rapids, Mich.	58.5	3.861	**50	**3.700
Saginaw, Mich.	66	4.356	53	3.922
Green Bay, Wis.	51	3.366	41	3.034
Milwaukee, Wis.	43	2.838	34.5	2.553
LaCrosse, Wis.	46	3.036	37	2.738
Minneapolis-St. Paul	46	3.036	37	2.738
Duluth, Minn.	52	3.432	41.5	3.071
Mankato, Minn.	46	3.036	37	2.738
Des Moines, Ia.	36	2.376	29	2.146
Davenport, Ia.	39	2.574	31	2.294
Mason City, Ia.	42	2.772	33.5	2.479
St. Louis, Mo.	33	2.178	26.5	1.961
Kansas City, Mo.	28	1.848	22.5	1.665
St. Joseph, Mo.	28	1.848	22.5	1.665
Fargo, N. D.	63	4.158	50.5	3.737
Minot, N. D.	83	5.478	66.5	4.921
Huron, S. D.	53	3.498	42.5	3.145
Wichita				
From Ponca City	7.5	*0.495	7.5	†0.555
From Tulsa	12.5	*0.825	12.5	†0.925
From Cushing	11	*0.726	11	†0.814

*This rate also includes distillate rate at 6.6 lbs. per gal.

**This rate applies only to residual fuel and gas oil.

†This rate is exclusive of distillate which is based on 6.6 lbs. per gal. from Ponca City, Tulsa and Cushing, Okla., to Wichita. Includes only gas oil and fuel oil.

NOTE: There is no Group 3 rate to Wichita, Kans.

SEABOARD PRICES EXPORT AND COASTWISE

(NOTE—Parenthetical figures after prices indicate number of companies quoting when less than three companies are quoting.)

Atlantic Coast

(Prices are of refiners, FOB their refineries & their tanker terminals, & of tanker terminal operators, FOB their terminals)—Prices Effective Apr. 28

MOTOR GASOLINE

District:	Min. 80 Oct. '39 Research (Max. 2 cc. Lead)	72-74 Oct. (ASTM)	68-70 Oct. (ASTM)
N. Y. Harb.	7.50 – 7.90	7.00	7.00 (2)
N. Y. Harb., barges	7.50 – 7.70	6.75 – 7.00	6.75 (2)
Albany	7.80	....	....
Philadelphia	6.25 – 7.75	6.25 – 6.50	6.25 – 7.25
Baltimore	6.25 – 7.25	6.25–6.50 (2)	6.25–6.50 (2)
Norfolk	6.25 – 7.25	6.25 – 6.50	6.25 – 6.75
Wilmington	6.375– 7.25	6.375–6.50 (2)	6.25 – 6.75
Charleston	7.00 – 7.25	6.375–6.50 (1)	6.50–6.75 (1)
Savannah	6.50 – 7.00	6.375 (1)	6.125– 6.50
Jacksonville	6.00 – 7.00	5.75 (1)	6.125– 6.50
Miami	6.625–7.00 (2)	....	6.375–6.50 (1)
Tampa	6.00 – 7.00	5.75 (1)	6.375–6.50 (2)
Pensacola	6.25–6.50 (1)	....	5.875–6.00 (1)
Mobile	6.125–6.50 (2)	....	5.875–6.00 (1)
Portland	8.00	7.75 (1)	....
Boston	7.90	6.75 – 7.50	6.75 (1)
Providence	7.90	7.35–7.50 (2)	....

FUEL OILS

	KEROSINE and/or NO. 1 FUEL	No. 2	No. 3	No. 5	No. 6
N. Y. Harb.	5.20	4.70	4.70	$1.55 –$1.65	$1.25 –$1.35
N. Y. Harb., barges	5.10	4.60	4.60	....	....
Albany	5.30 – 5.40	4.90	4.90 (2)	$1.95 (1)	$1.55 (1)
Philadelphia	5.00 – 5.50	4.50 – 4.75	4.50 – 4.75	$1.37 –$1.47	$1.25 –$1.45
Baltimore	5.25	4.50 – 4.75	4.50 – 4.75	$1.47 (1)	$1.25 –$1.35
Norfolk	5.00 – 5.50	4.50 – 4.75	4.50–4.75 (2)	....	$1.35 (2)
Wilmington	5.00 – 5.50	4.50 – 4.75	....	....	....
Charleston	5.25 – 5.50	4.75 (2)	....	....	$1.30 (2)
Savannah	5.00 – 5.25	4.50 (2)	....	....	$1.30 (1)
Jacksonville	5.00 – 5.25	4.75 (1)	4.75 (1)	....	$1.30 (1)
Miami	5.00–5.25 (2)	....	....	....	....
Tampa	4.75 – 5.25	4.75 (1)	....	....	$1.25 (1)
Pensacola	4.625–4.75 (1)	....	....	....	....
Mobile	4.625– 4.75	....	....	....	....
Portland	5.40	5.00	5.00 (2)	$1.95(1)	$1.35 –$1.55
Boston	5.30	4.90	4.90 (2)	$1.55–$1.65(2)	$1.25 –$1.35
Providence	5.30	4.90	4.90	$1.55 –$1.65	$1.25 –$1.35

	Bunker C Fuel Ships' bunkers (Ex Lighterage)	Diesel Oil Ships' bunkers (Ex Lighterage)	Diesel Oil Shore Plants	Gas House Gas Oil 28-34 Gravity
N. Y. Harbor	$1.25 –$1.35	$1.95	4.70–4.80 (2)	4.80 (2)
Albany	$1.55 (1)	$2.15 (1)	4.90 (1)	5.10 (1)
Philadelphia	$1.25 –$1.45	$1.85 –$1.95	....	....
Baltimore	$1.25 –$1.35	$1.85 –$1.95	4.25 (1)	4.25 (1)
Norfolk	$1.35	$1.85	4.25 (1)	4.25 (1)
Charleston	$1.30	$1.85	4.25 (1)	4.25 (1)
Savannah	$1.30 (1)	$1.785 (1)	....	....
Jacksonville	$1.30 (2)	$1.785–$1.89	....	....
Tampa	$1.25 (2)	$1.785–$1.89	....	....
Portland	$1.35 –$1.55	$2.05	5.00 (1)	5.10 (1)
Boston	$1.25 –$1.35	$1.95	4.90 (2)	5.00 (2)
Providence	$1.25 –$1.35	$1.95	4.90 (1)	5.00 (1)

New York Export Lubes

(Penna. Products in bbls. FAS New York)

Prices Effective	Apr. 28	Apr. 21
Bright stock:		
Light, 25 p.t.	26.50 (1	26.50 (1)
Neutral oil:		
150 3 color, 25 p.t.	29.00 (1)	29.00 (1)
600 s.r., unfilt.	19.00 (1)	19.00 (1)
650 s.r., unfilt.	19.50 (1)	19.50 (1)
600 fl. s.r.	20.00 (1)	20.00 (1)
630 fl., s.r.	21.00 (1)	21.00(1)

Wax

(Melting points are AMP, 3° higher than EMP. Export prices FAS c.l. Domestic prices FOB, in bags, c.l. Scale solid; fully refined slabs.)

Prices Effective Apr. 28

	New Orleans Export	N. Y. Domestic	N. Y. Export
Crude Scale:			
124-6 Yellow	3.25 (1)	....	3.25 (1)
122-4 White	....	3.25–3.50	3.25–3.50
124-6 White	3.25–3.375(2)	3.10–3.50	3.25–3.50
Fully Refined:			
123-5	....	5.60 (a)	5.60(2)
125-7	5.60(1)	5.60(a)	5.60
128-30	5.60(1)	5.60–5.70	5.60
130-2	5.85(1)	5.85	5.85
133-5	6.15(1)	6.15	6.15
135-7	6.40(1)	6.40(2)	6.40
108-11 White Match wax (tight bbls.)			3.75 (1)

Naphtha

Prices Effective Apr. 28	V.M.&P. Naphtha	Mineral Spirits
Baltimore	9.50 (2)	8.00 – 8.50
New York Harbor	9.80	8.50 – 8.80
Philadelphia district	10.00 (2)	8.00 – 9.00
Boston	9.00 (2)	8.75 – 9.25
Providence	9.00 (1)	8.75 (2)

Pacific Export

(Quotations at seaboard, Los Angeles, cargo lots, except where otherwise noted.)

Prices Effective	Apr. 28	Apr. 21
375 e.p. blend, 70 oct.	5.75 – 5.875	5.625– 6.25
390 e.p. blend, 68 oct.	5.50 – 5.75	5.375– 5.50
390 e.p. blend, 66 oct.	5.25 – 5.50	5.25 – 5.50
400 e.p. blend, 65 oct. min.	5.125– 5.25	5.125– 5.25
U. S. Motor, under 65 octane	5.00 – 5.125	5.00 – 5.125
38-41 grav. w.w. kero., 150 fire point	4.50 – 5.00	4.50 – 5.00
41-43 grav., w.w. kero.	4.75 – 5.00	4.75 – 5.00
44 grav., w.w. kero.	5.00 – 5.50	5.00 – 5.50
Diesel fuel, 24 & above	$1.25 –$1.30	$1.25 –$1.30
Diesel fuel, under 24	$1.15 –$1.25	$1.15 –$1.25
30-34 grav. diesel (gas oil) Pac. Spec. 200	$1.25 –$1.35	$1.25 –$1.35
Grade C fuel, Pac. Spec. 400	$0.65 –$0.75	$0.65 –$0.75
In Ship's Bunkers, or deep tank lots:		
Diesel fuel, Pac. Spec. 200	$1.35 –$1.45	$1.35 –$1.45
Grade C fuel, Pac. Spec. 400	$0.70 –$0.75	$0.70 –$0.75

Pacific Export (Cont'd)

Prices Effective	Apr. 28	Apr. 21
Cased Goods: (Per case)		
U. S. Motor	$1.35 –$1.45	$1.35 –$1.45
375-400 e.p. blend, 65 oct. & above	$1.50 –$1.60	$1.50 –$1.60
400 e.p. blend, under 65 oct.	$1.40 –$1.50	$1.40 –$1.50
40-43 grav. w.w. kero., 150 fire point	$1.30 –$1.40	$1.30 –$1.40
Kero., p.w.	$1.25 –$1.35	$1.25 –$1.35

Tanker Rates

(Approximate rates. Cents per bbl.)

Gulf-N. Atlantic: (not E. of N.Y.)	Last Paid	Owners Ask
Hvy. Crude & Fuel (10 to 19.9 gravity)	57	..
Light Crude, (30 grav. or Lighter)	50	..
Gasoline	50	..
Kerosine	53	..
No. 2 Fuel	57	..

Gulf Coast

(Prices for sales made or firm offers reliably reported for sales pending in cargoes FOB ship at Gulf, for minimum of 20,000 bbls. Prices are by refiners only to other refiners, export agents, or to large tanker terminal operators at the customary trade specifications noted.)

Prices Effective Apr. 28

Motor Gasoline Domestic	
Min. 80 oct. '39 Research, max. 2cc lead	5.625– 6.00
60-62, Gravity, Max. 400 e.p.	
72-74 oct. leaded (ASTM)	5.25 – 5.75
70 oct. unleaded "	5.75 – 6.00
68 oct. " "	5.625– 6.00
65 oct. " "	5.00 – 5.25
60 oct. " "	5.00
41-43 w.w. kerosine	3.375– 3.75
No. 2 fuel	3.25 – 3.50
Gas Oil—Less than ½ of 1% sulfur.	
Below 43 diesel index	3.125– 3.25
43-47 " "	3.125– 3.25
48-52 " "	3.125– 3.375
53-57 " "	3.25 – 3.50
58 & above diesel index	3.625
Diesel Oil, ships' bunkers (ex-Fighterage)	$1.45 –$1.50
Bunker C, " " "	$0.85 –$0.90
Bunker C, cargoes	$0.85 –$0.90
Motor Gasoline Export	
60-62 Gravity, Max. 400 e.p.	
72-74 oct. leaded (ASTM)	5.25 – 5.75
70 oct. unleaded "	5.75 – 6.00
68 oct. " "	5.625– 6.00
65 oct. " "	5.00 – 5.25
60 oct. " "	5.00
61-63 Gravity, Max. 390 e.p.	
72-74 oct. leaded (ASTM)	5.50
60 oct. unleaded "	....
64-66 Gravity, Max. 375 e.p.	
72-74 oct. leaded (ASTM)	5.50
60 oct. unleaded "	....
41-43 w.w. kerosine	....
Gas Oil—Less than ½ of 1% sulfur.	3.375– 3.75
Below 43 diesel index	3.125– 3.25
43-47 " "	3.125– 3.25
48-52 " "	3.125– 3.375
53-57 " "	3.25 – 3.50
58 & above diesel index	3.625

MID-CONTINENT LUBES

(At Gulf; in packages, FAS.; in bulk FOB terminals)

	Apr. 28 New Steel Drums	Bulk
200 vis. D. 210 brt. stock	26.00–26.30 (2)	20.30 (2)
150 vis. D 210 brt. stock 0-10 p.p.	22.00–22.30 (2)	16.30 (2)
10-25 p.p.	21.80 (1)	15.80 (1)
100 vis. D 210 brt. stock 0-10 p.p.	21.80 (1)	15.80 (1)
10-25 p.p.	21.30 (1)	15.30 (1)
200 vis. No. 3 col. neutral: 0-10 p.p.	17.00 (1)	11.30 (1)

SOUTH TEXAS LUBES

(Vis. at 100°, c. t. 0, blk exprt. shp., FOB terminals)

Unfiltered Pale Oils: Vis. Color	Apr. 28	Apr. 21
100 No. 3	6.00 (2)	6.00 (2)
200 No. 3	7.50 (2)	7.50 (2)
300 No. 3	8.00 (2)	8.00 (2)
500 No. 3½	9.00 (2)	9.00 (2)
750 No. 4	9.50 (2)	9.50 (2)
1200 No. 4	10.00 (2)	10.00 (2)
2000 No. 4	10.25 (1)	10.25 (1)
Red Oils: Vis. Color		
100 No. 5-6	6.00 (1)	6.00(1)
200 No. 5-6	7.50 (2)	7.50 (2)
300 No. 5-6	8.00 (2)	8.00(2)
500 No. 5-6	9.00 (2)	9.00 (2)
750 No. 5-6	9.50 (2)	9.50 (2)
1200 No. 5-6	10.00 (2)	10.00 (2)
2000 No. 5-6	10.25 (2)	10.25 (2)

(a) 0.4c discount generally given for slabs loose.

TANK WAGON PRICES

Commercial or consumer tank car, tank wagon, dealer, and service station prices for gasoline **do not include taxes;** *they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include 1.5c federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes where levied are indicated in footnotes. Dealer discounts are shown in footnotes. These prices in effect Apr. 28, 1941 as posted by principal marketing companies at their headquarters offices, but subject to later correction.*

S. O. New Jersey

Esso (*Regular Grade*)

	Consumer Tank Car	Dealer T.W.	Gaso-line Taxes	Kero-sine T.W.
*Atlantic City, N. J.	7.1	8.3	4.5	7.8
*Newark, N. J.	7.1	8.3	4.5	7.8
Annapolis, Md.	7.35	8.85	5.5	9.5
Baltimore, Md.	6.75	8.25	5.5	8
Cumberland, Md.	8.15	9.65	5.5	10
Washington, D. C.	7	8.5	3.5	9
Danville, Va.	7.95	10.45	6.5	9.75
Norfolk, Va.	6.75	9.25	6.5	9.5
Petersburg, Va.	7.05	9.55	6.5	10.5
Richmond, Va.	7.05	9.55	6.5	10.5
Roanoke, Va.	8.25	10.75	6.5	10
Charleston, W. Va.	7.55	10.05	6.5	11.5
Parkersburg, W. Va.	6.85	9.35	6.5	11.2
Wheeling, W. Va.	7.85	9.1	6.5	11.8
Charlotte, N. C.	8.9	9	7.5	10.1
Hickory	9.45	10.95	7.5	10
Mt. Airy, N. C.	9.3	8.5	7.5	10.7
Raleigh, N. C.	8.65	9.5	7.5	10
Salisbury, N. C.	8.95	8	7.5	10.4
Charleston, S. C.	6.75	9.25	7.5	....
Columbia, S. C.	7.6	10.1	7.5	....
Spartanburg, S. C.	8.3	10.8	7.5	....

	Mineral Spirits T.W.	V.M.&P. T.W.
Newark, N. J.	10.5	14.5
Baltimore, Md.	15	....
Washington, D. C.	15	....

Fuel Oils—T.W.	No. 1	No. 2	No. 3
Atlantic City, N. J.	7.8	6.7	6.7
Newark	7.8	6.7	6.7
Annapolis, Md.	....	7	..
Baltimore	7	6.5	6
Washington, D. C.	7.6	6.75	6.75
Norfolk, Va.	7.25	6.25	6.25
Petersburg	7.5	6.5	..
Richmond	7.5	6.5	6.5
Charlotte, N. C.	9.1	7.9	..
Hickory	....	7.5	..
Raleigh	9	7.6	..
Charleston, S. C.	....	6.6	..
Columbia	....	7.6	..
Spartanburg	....	8.3	..

*Effective April 10, '41, minimum retail resale price of 11.4c posted thru New Jersey.

Discounts:

Esso gasoline—to undivided dealers, 0.5c off dealer t.w. price, thru territory, except New Jersey. While above posted prices continue at Atlantic City and Newark, dealers will pay net price of 8.1c per gal. for Esso; dealers having pumps marked only Esso, Esso Extra and Standard White gasoline will pay 7.6c per gal. for Esso.

Kerosene—1c off t.w. price for 25 gals. or more, under contract thru territory (Baltimore city contract not necessary) except no discount in state of New Jersey.

Naphthas—To buyers taking following quantities at one time: Newark, 2c per gal. on 200 gals. or more, less than 200 gals. 0.5c higher price: Baltimore, 2c off on 25 to 100 gals. and 3c on over 100 gals.; Washington, 2c off to contract buyers.

Socony-Vacuum Oil Co., Inc.

Socony Mobilgas (*Regular Grade*)

	Com. Com. T.C.	Undiv. Cons. T.W.	Dlr. T.W.	Gaso-line Taxes
New York City:				
Manhattan & Bronx	7.9	7.6	8.2	*5.5
Kings & Queens	7.9	7.6	8.2	*5.5
Richmond	7.8	7.5	8	5.5
Albany, N. Y.	8.4	8.1	8.2	5.5
Binghamton, N. Y.	8.8	8.5	9	5.5
Buffalo, N. Y.	8	7.7	8.2	5.5
Jamestown, N. Y.	8	7.7	8.2	5.5
Mt. Vernon, N. Y.	8	7.7	8.2	5.5
Plattsburg, N. Y.	9.4	9.1	9.6	5.5
Rochester, N. Y.	8.7	8.4	8.9	5.5
Syracuse, N. Y.	8.5	8.2	8.7	5.5
Bridgeport, Conn.	8.5	8.2	8.7	4.5
Danbury, Conn.	9	8.7	9.2	4.5
Hartford, Conn.	8.8	8.5	9	4.5
New Haven, Conn.	8.5	8.2	8.7	4.5
Bangor, Me.	8.7	8.4	9.4	5.5
Portland, Me.	8.3	8	9	5.5
Boston, Mass.	7.9	7.6	8.2	4.5
Concord, N. H.	10.1	9.8	10.3	5.5
Lancaster, N. H.	10.8	10.5	11	5.5
Manchester, N. H.	9.1	8.8	9.3	5.5
Providence, R. I.	7.9	7.9	8.7	4.5
Burlington, Vt.	9.4	9.1	9.6	5.5
Rutland, Vt.	9.5	9.2	9.7	5.5

	Mineral Spirits T.W.	V.M.&P. T.W.
Buffalo, N. Y.	9.8	10.5
†New York City	9.5	10.5
Rochester, N. Y.	10.7	11.4
Syracuse, N. Y.	11.5	....
Boston, Mass.	11	11
Hartford, Conn.	12	13
Providence, R. I.	11	12

	Kero-sine Yard	Kero-sine T.W.	Mobil-fuel Diesel TC	Mobil-fuel Diesel T.W.	Mobil-heat Fuel Yard	Mobil-heat Fuel T.W.
New York:						
Manhat'n & Bronx	..	7.9	....	6.9	..	6.5
Kings & Queens	5.4	7.9	....	6.9	4.9	6.5
Richmond	5.4	7.9	....	6.9	4.9	6.5
Albany	5.6	7.6	5.1	7.1	5.1	6.8
Binghamton	7	9	....	....	6.5	8
Buffalo	6.2	8	5.7	7.7	5.7	7.4
Jamestown	5.9	8	....	....	5.9	7
Mt. Vernon	5.6	8.1	....	7.1	5.1	6.7
Plattsburg	6.2	8.2	....	....	5.7	7.2
Rochester	6.6	8.6	....	....	6	7.5
Syracuse	6.5	8.5	....	....	6.2	7.7
Conn.:						
Bridgeport	5.7	7.5	....	....	5.2	6.5
Danbury	6.2	8.6	....	....	5.7	6.7
Hartford	5.4	7.4	....	7.1	5.1	6.7
New Haven	5.2	6.8	....	....	5.2	6.5
Maine:						
Bangor	6	8	....	....	5.4	7
Portland	5.6	8	5.2	7.2	5.2	6.9
Mass.:						
Boston	5.7	7.9	5.3	7.3	5.3	6.9
N. H.:						
Concord	6.5	8.5	....	....	6.4	7.9
Lancaster	7.6	9.6	....	....	7.4	8.9
Manchester	6.6	8.9	....	....	6.1	7.6
R. I.:						
Providence	5.7	7.7	5.3	7.3	5.3	6.8
Vermont:						
Burlington	6.2	8.2	....	....	5.6	7
Rutland	6.4	8.4	....	....	5.8	7.3

*Plus 2% city sales tax computed at time of each sale.

†Prices apply to consumers only in quantities over 1000 gals. annually; for quantities under 1000 gals. annually, add 0.5c per gal.

Discounts: Diesel—On t.w. deliveries, 0.5c for at least 100 gals.; 1c for full tank truck.

Atlantic Refining

Atlantic White Flash Gasoline (*Regular Grade*)

	Commer-cial T.C.	Dealer T.W.	Gaso-line Taxes	Kero-sine T.W.
Philadelphia, Pa.	7.5	8.5	5.5	10
Pittsburgh	8	9.5	5.5	10.5
Allentown	8	9.5	5.5	10.5
Erie	7	9.5	5.5	10
Scranton	8	9.5	5.5	10.5
Altoona	8	9.5	5.5	10.5
Emporium	8	9.5	5.5	10.5
Indiana	8	9.5	5.5	10.5
Uniontown	8	9.5	5.5	10.5
Harrisburg	8	9.5	5.5	10.5
Williamsport	8	9.5	5.5	10
Dover, Del.	....	9	5.5	10.5
Wilmington, Del.	....	8.5	5.5	10
Boston, Mass.	....	8.7	4.5	7.7
Springfield, Mass.	....	9.5	4.5	8.6
Worcester, Mass.	....	9.3	4.5	7.7
Fall River, Mass.	....	9.2	4.5	8.3
Hartford, Conn.	....	9.5	4.5	7.8
New Haven, Conn.	....	9.2	4.5	8.4
Providence, R. I.	....	9.2	4.5	8.3
Atlantic City, N. J.	....	8.9	4.5	8.1
Camden, N. J.	....	8.9	4.5	8.1
Trenton, N. J.	....	8.9	4.5	8.1
Annapolis, Md.	....	8.85	5.5	8
Baltimore, Md.	....	8.25	5.5	7
Hagerstown, Md.	....	9.35	5.5	7.6
Richmond, Va.	....	9.55	6.5	9.5
Wilmington, N. C.	....	9.75	7.5	9.3
Brunswick, Ga.	....	8.5	7.5	*9
Jacksonville, Fla.	....	8.5	8.5	10

	Mineral Spirits T.W.†	V.M.&P. T.W.†
Philadelphia, Pa.	12	14.5
Lancaster, Pa.	13.5	16
Pittsburgh, Pa.	14.5	14.5

Fuel Oils—T.W.	1	2	3	5	6
Phila., Pa.	8	6.5	6.5	4.25	3.50
Allentown, Pa.	8.5	7	7	....	....
Wilmington, Del.	8.00	6.5	6.5	....	....
Springfield, Mass.	8.6	7.1	7.1	....	....
Worcester, Mass.	7.7	7.3	7.3	....	....
Hartford, Conn.	7.8	6.7	6.7	....	....

*Does not include 1c Georgia kerosine tax.

†Mineral Spirits prices also apply to Stoddard Solvent; V.M.&P. prices also apply to Light Cleaners Naphtha.

Discounts:

Gasoline—to undivided dealers, 0.5c off dealer t.w., except Georgia & Florida dealer t.w. and undivided dealer t.w. prices are same.

Kerosine—Thru Penna. & Delaware, 2c off t.w. price on t.w. deliveries of 25 gals. or more at one time.

Naphthas—Philadelphia, 200 gals. or more at one time, 2c off, Lancaster, contract buyers taking 1000 gals. or more per year, one drum up, 2c off; non-contract buyers, 200 gals. or more at one time, 2c off. Pittsburgh, 500 gals. or more at one time, 2c off.

S. O. Ohio††

***Sohio X-70 Gasoline (*Regular Grade*)**

	Con-sumer T.W.	**Re-sellers	Gaso-line Taxes ‡S.S.	†Kero-sine T.W.
Ohio, Statewide	11	9	12.5	5.5	8.5
Akron	11	8	10	5.5	8.5
Cincinnati	11	8	10.5	5.5	8.5
Cleveland	11	8.5	11.5	5.5	8.5
Columbus	11	8.5	11.5	5.5	8.5
Dayton	11	7.5	10	5.5	8.5
Marietta	11	8.25	11	5.5	8.5
Portsmouth	11	8.5	11.5	5.5	8.5
Toledo	11	8	10.5	5.5	8.5
Youngstown	11	8.5	11.5	5.5	8

Aviation Gasoline—Statewide

	Consumer T.W.	Gasoline Taxes
Sohio Aviation	14.5	5.5
Esso Ethyl Aviation 74 Oct.	15.5	5.5
Esso Ethyl Aviation 80 Oct.	16.5	5.5
Esso Ethyl Aviation 87 Oct.	17.5	5.5
Esso Ethyl Aviation 90 Oct.	17.5	5.5
Esso Ethyl Aviation 100 Oct.	24.5	5.5

†Naphthas—T.W.	State-wide	Lucas County
S. R. Solvent	12.75	12.75
D.C. Naphtha	13.25	13
V.M.&P. Naphtha	13.25	13
Varnolene	13.25	13
Sohio Solvent	13.25	13

Fuel Oils—T.W.	No. 1	No. 2	No. 3	No. 4
Ohio, Statewide	7.5	7.5	7	....
Cleveland	9.5	9.5	9.0	6.75

*Renown (third-grade) prices are same as X-70 unless otherwise noted.

**Except authorized agents.

†Kerosine prices are ex 1c state tax. Naphtha prices are ex 1.5c federal & 4c state tax.

‡Prices at company-operated stations.

††Statewide prices are subject to exceptions other than those shown.

Discounts:

Esso aviation—on contract to hangar operators and resellers, 2c off consumer t.w.

Fuel Oils—Statewide prices are for t.w. & drum deliveries of 50 gals. or more; prices for deliveries of less than 50 gals. are 0.5c higher. Cleveland Nos. 1, 2, and 3 prices are for bulk deliveries of 5 to 99 gals.; 100 gals. and over are 2c less. Cleveland No. 4 price is for full compartment hose dump only.

Naphthas—to contract consumers off t.w. prices—Statewide: 300 to 999 gals., 0.5c; 1000 to 2499 gals., 0.75c; 2500 to 4999 gals., 1c; 5000 or more gals., 1.5c. Lucas County: Less than 50 gals., tank wagon price; 50 to 249 gals., 0.5c; 250 to 499 gals., 1c; 500 gals. or over, 1.5c.

S. O. Kentucky

Crown Gasoline (*Regular*)
Standard (*Third Grade*)

	†Net Crown	Dealer Standard	Gaso-line Taxes	Kero-sine T.W.
Covington, Ky.	7.5	6.5	6.5	9
Lexington, Ky.	9.5	8	6.5	9
Louisville, Ky.	9	7.5	6.5	8.5
Paducah, Ky.	9.5	8.5	6.5	6.5
Jackson, Miss.	9	8	7.5	*8.5
Vicksburg, Miss.	8.5	7.5	7.5	*8
Birmingham, Ala.	8.5	7.5	*8.5	8
Mobile, Ala.	8	6.5	*9.5	8
Montgomery, Ala.	9	8	*9.5	*9
Atlanta, Ga.	9.5	8.5	7.5	*9
Augusta, Ga.	9.5	8.5	7.5	*8.5
Macon, Ga.	9.5	8.5	7.5	*8
Savannah, Ga.	8.5	7.5	7.5	*8
Jacksonville, Fla.	8.5	7.5	8.5	8
Miami, Fla.	8.5	7.5	8.5	8
Pensacola, Fla.	8	7	*9.5	8
Tampa, Fla.	8.5	7.5	8.5	8

*Taxes: In tax column are included these city and county gasoline taxes: Mobile, 2c city; Birmingham, 1c city; Montgomery, 1c city and 1c county; Pensacola, 1c city. Georgia and Montgomery, Ala. have 1c kerosine tax, Mississippi 0.5c, not included in above prices.

†Consumer t.w. prices are same as net dealer prices.

S. O. Indiana

Red Crown (*Regular Grade*)
Standard (*Third Grade*)

	Red Dealer Prices Crown Cons. T.W.	Red Crown	Stano-lind	Gaso-line Taxes	Kero-sine T.W.
Chicago, Ill.	10.6	8.6	6.9	4.5	10
Decatur, Ill.	10.6	9.1	6.7	4.5	8.5
Joliet, Ill.	11.6	10.1	7.2	4.5	10
Peoria, Ill.	11.6	9.2	8.6	4.5	10
Quincy, Ill.	11.4	9.9	8	4.5	9.8
Indianapolis, Ind.	11.8	9.8	9.4	5.5	*10
Evansville, Ind.	11.6	9.4	8.5	5.5	*9.8

(Continued on next page)

TANK WAGON PRICES

Commercial or consumer tank car, tank wagon, dealer, and service station prices for gasoline **do not include taxes;** *they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include 1.5c federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes where levied are indicated in footnotes. Dealer discounts are shown in footnotes. These prices in effect Apr. 28, 1941 as posted by principal marketing companies at their headquarters offices, but subject to later correction.*

S. O. Indiana (Cont'd)

Red Crown (*Regular Grade*)
Stanolind (*Third Grade*)

	Red Crown Cons. T.W.	Dealer Prices Red Crown	Stano-lind	Gaso-line Taxes	Kero-sine T.W.
South Bend, Ind	11.8	10.3	9.3	5.5	*10
Detroit, Mich	10.6	9.1	8.1	4.5	8.1
Grand Rapids, Mich	10.9	9.4	8.9	4.5	9.1
Saginaw, Mich	10.9	9.4	8.9	4.5	9.1
Green Bay, Wis	12.4	10.9	10.4	5.5	10.8
Milwaukee, Wis	11.8	10.3	9.8	5.5	10.2
La Crosse, Wis	12	10.5	10	5.5	10.4
Minneapolis-St. Paul	12	10.2	7.8	4.5	10.4
Duluth, Minn	12.4	10.9	10.4	4.5	10.8
Mankato, Minn	12	10.5	9	4.5	9.5
Des Moines, Ia	11.4	9.9	8.4	4.5	*9.8
Davenport, Ia	11.6	10.1	9.6	4.5	*10
Mason City, Ia	11.8	10.3	7.8	4.5	*10.2
St. Louis, Mo	10.7	9.2	7.5	*4.5	9.6
Kansas City, Mo	10.9	7.9	6.9	*4.5	8.6
St. Joseph, Mo	10.9	9	8	*4.5	8.4
Fargo, N. D	13.2	11.7	9.5	5.5	11.6
Huron, S. D	12.5	11	10.5	5.5	10.9
Wichita, Kans	9.8	8.3	6	4.5	7.2

Stanavo Aviation 73 Octane

Chicago, Ill	14.9		
Detroit, Mich	16.5	4.5	
Milwaukee, Wis	15.1	5.5	
Minneapolis, Minn	15.3	4.5	
St. Louis, Mo	14.5	*4.5	
Kansas City, Mo	14.1	*4.5	
Fargo, N. D	16.5	5.5	
Huron, S. D	15.8	5.5	

	Oleum Spirits	V.M.&P. Naphtha	Stani-sol	*Taxes
(Prices are base prices before discounts)				
Chicago	12.7	13	12.4	4.5
Detroit	15.2	14.2	15.7	4.5
K. C., Mo	12.9	13.9	13.4	1.5
St. Louis	13.2	14.2	12.4	1.5
Milwaukee	13.8	14.8	14.3	5.5
Minneap'ls	14	15	12.7	4.5

	Fuel Oils T.W. Standard Heater Oil Chicago:
1-99 gals	8.75
100-149 gals	7.75
150 gals. & over	7.25

	Stanolex No. 1	Stanolex Furnace Oil
1-99 gals	8.5	8.5
100-149 gals	7.5	7.5
150-399 gals	7.25	7.25
400 gals. & over	6.75	6.75

	Stanolex Fuel Oil A	Stanolex Fuel Oil B
1-99 gals	7.5	7.5
100-399 gals	6.5	6.5
400-749 gals	5.5	5.5
750 gals. & over	4.75	4.75

	Stanolex Bunker C Fuel Oil
1-399 gals	6
400-999 gals	5
1000 gals. & over	4

Other Points:	Stanolex No. 1	Stanolex Furnace Oil
Indianapolis		
1-99 gals	...	*8.5
100 gals. & over	...	*7.5
Detroit		
1-99 gals	...	7.8
100 gals. & over	...	7.8
Milwaukee		
1-99 gals	9.2	8.7
100 gals. & over	8.2	7.7
Minneapolis		
1-99 gals	8.2	8.2
100 gals. & over	...	7.2
100-199 gals	7.7	...
200 gals. & over	7.2	...
St. Louis		
1-99 gals	8	7.5
100 gals. & over	7	6.5
Kansas City		
1-49 gals	7.8	...
50 gals. & over	6.8	...
1-99 gals	...	7.8
100 gals. & over	...	6.8

*Taxes: In gasoline tax column are included these city taxes—Kansas City, St. Joseph, and St. Louis, 1c. Indiana kerosine and fuel oil prices are ex 4c state tax: Iowa kerosine prices are ex 3c state tax. In naphtha tax column are included 1.5c federal tax and state taxes.

S. O. Nebraska

Standard Red Crown Gasoline
(*Regular Grade*)

	T.W.	Dealer	Gaso-line Taxes	Kero-sine T.W.
Omaha	11.4	8.4	6.5	9.8
McCook	11	8.4	6.5	8.5
Norfolk	11.5	9.9	6.5	9.9
North Platte	11.8	10	6.5	10.2
Scottsbluff	10.9	8.5	6.5	9.5

S. O. Louisiana

Esso Gasoline (*Regular Grade*)

	Consumer Tank Car	Dealer T.w.	Gaso-line Taxes	Kero-sine T.W.
New Orleans, La	5.75	8.25	8.5	*0
Baton Rouge, La	6.25	8.75	8.5	*0.5
Alexandria, La	6.25	8.75	8.5	*0.5
Lafayette, La	6.5	9	8.5	*0
Lake Charles, La	6.25	8.75	8.5	*0
Shreveport, La	5.5	8	8.5	*0
Knoxville, Tenn	9.5	11.5	8.5	12.5
Memphis, Tenn	6.5	8.5	8.5	10.5
Chattanooga, Tenn	9	8.85	8.5	11
Nashville, Tenn	8.5	9	8.5	10
Bristol, Tenn	9.75	9.75	8.5	12
Little Rock, Ark	6.75	9.25	8	10

*Louisiana kerosine prices are ex 1c state tax.
Discounts:
Esso Gasoline—To individed dealers, 0.5c off dealer t.w.

Humble Oil & Refining Co.

Humble Motor Fuel (Regular Grade)
Thriftane (*Third Grade*)

	Humble *Tank Wagon	Re-tail	Thriftane *Tank Wagon	Re-tail	Gaso-line Taxes
Dallas, Tex	†6.5	9.5	‡5.5	8	5.5
Ft. Worth, Tex	6.5	10.5	5.5	8.5	5.5
Houston, Tex	8	12	6	9	5.5
San Antonio, Tex	8	12	6	9	5.5

	Kerosine *Tank Wagon	Retail
Dallas, Tex	6	10
Ft. Worth, Tex	7	11
Houston, Tex	8	11
San Antonio, Tex	7	11

74 Oct. Aviation Gasoline, Clear	Tank Car
FOB Baytown, Tex	8.5

*To all classes of dealers & consumers.
†Discounts to dealers only: Humble 1c; Thriftane 0.5c.

The Texas Co.

	Gasoline—Dealer Fire-Chief (*Regular*)	T.W. Indian (*3rd Grade*)	Gaso-line Taxes
Dallas, Tex	6.5	5.5	5.5
Ft. Worth, Tex	6.5	5.5	5.5
Wichita Falls, Tex	7.5	5.5	5.5
Amarillo, Tex	7.5	5.5	5.5
Tyler, Tex	7.5	5.5	5.5
El Paso, Tex	9	8	5.5
San Angelo, Tex	7.5	5.5	5.5
Waco, Tex	7.5*	5.5**	5.5
Austin, Tex	8	6	5.5
Houston, Tex	8	6	5.5
San Antonio, Tex	8	6	5.5
Port Arthur, Tex	8	6	5.5

*Less 1c temporary allowance to all dealers.
**Less 0.5c temporary allowance to all dealers.

Continental Oil

	Conoco Bronz-z-z (*Regular*) †Tank	De-mand (*3rd Grade*) Wagon	Gaso-line Taxes	Kero-sine T.W.
Denver, Col	8.5	7.5	5.5	10.5
Grand Junction, Col	12	11	5.5	12
Pueblo, Col	8.5	7.5	5.5	9
Casper, Wyo	11	10	5.5	11.5
Cheyenne, Wyo	10	9	5.5	11
Billings, Mont	11	10	6.5	12
Butte, Mont	10	9	6.5	13
Great Falls, Mont	10	9	6.5	12
Helena, Mont	10	9	6.5	12.5
Salt Lake City, Utah	11.5	10.5	5.5	14
Boise, Ida	13.1	12.1	6.5	16
Twin Falls, Ida	14.1	13.1	6.5	16.5
Albuquerque, N. M	10	9	*7	9.5
Roswell, N. M	8	7	*7	8
Santa Fe, N. M	10	9	*7.5	9.5
Ft. Smith, Ark	8	5.75	*5.5	6.5
Little Rock, Ark	8.75	5.5	8	8
Texarkana, Ark	8	6	*5.5	6
Muskogee, Okla	7.5	6.5	5.5	7
Oklahoma City, Okla.	7	6.5	5.5	7
Tulsa, Okla	7	6.5	5.5	7

*Taxes: In gasoline tax column are included these city taxes—Albuquerque, & Roswell, 0.5c; Santa Fe, 1c. Texas 4c state tax applies within city limits of Texarkana, Ark.; Okla. 4c state tax applies within city limits of Ft. Smith, Ark.

†To consumers & dealers.

Discounts: To dealers only — Cheyenne 1.5c on Bronz-z-z & Demand.

S. O. California

Standard Gasoline (*Regular Grade*)
Flight Gasoline (*Third Grade*)

	Standard Tank Truck	Standard Retail	Flight Tank Truck	Flight Retail	Gaso-line Taxes
San Francisco, Cal	12.5	13.5	10.5	11.5	4.5
Los Angeles, Cal	12	13	10	11	4.5
Fresno, Cal	13.5	14.5	11.5	12.5	4.5
Phoenix, Ariz	14.5	15.5	11.5	12.5	6.5
Reno, Nev	14.5	15.5	12.5	13.5	5.5
Portland, Ore	13	14	11	12	6.5
Seattle, Wash	13	14	11	12	6.5
Spokane, Wash	14.5	15.5	12.5	13.5	6.5
Tacoma, Wash	13	14	11	12	6.5

	Stanavo Tank Truck	Aviation Gasoline Taxes	Kerosine Tank Truck
San Francisco, Cal	15.5	4.5	11.5
Los Angeles, Cal	15	4.5	10
Fresno, Cal	16.5	4.5	12.5
Phoenix, Ariz	17.5	6.5	*12.5
Reno, Nev	17.5	5.5	13.5
Portland, Ore	16	6.5	13.5
Seattle, Wash	16	6.5	13.5
Spokane, Wash	19	6.5	16.5
Tacoma, Wash	16	6.5	13.5

*Taxes: Phoenix kerosine price is ex 5c state tax.
Discounts:
To Resale & Commercial Consumers—3c off posted tank truck tax included price on Standard & Stanavo Aviation, 2c off on Flight. Deliveries less than 40 gals. to commercial consumer trade, 1c a gal. above posted tank truck tax included price, except single deliveries to Marine trade only which are billed at posted tank truck tax included price less 3c for Standard & Stanavo Aviation, and less 2c for Flight.
Kerosine—Tank car and truck & trailer deliveries, 3c off posted tank truck price; plant stem deliveries to jobbers, 2.5c off posted tank truck price.

Canada

PRICES OF IMPERIAL OIL LTD.
Per Imperial Gallon, which is 1.2 U. S. Gallons
3-Star Imperial Gasoline (*Regular Grade*)

	Gasoline T.W.	Gasoline Taxes	Kero-sine T.W.
Hamilton, Ont	16.5	8	17
Toronto, Ont	16.5	8	17
Brandon, Man	21	7	23
Winnipeg, Man	20.5	7	22.5
Regina, Sask	18	7	20
Saskatoon, Sask	20.8	7	22.8
Edmonton, Alta	18.9	7	20.9
Calgary, Alta	16	7	18
Vancouver, B. C	16	7	23
Montreal, Que	16	8	16.5
St. John, N. B	14.50	10	18
Halifax, N. S	14.50	10	18

Discounts: Gasoline—Maritime Provinces—undivided & divided dealers, t.w. price; British Columbia—undivided and divided dealers, 2c off t.w. price; balance of territory—undivided dealers, 1c off t.w. price, divided dealers, t.w. price.

Tank Wagon Price Changes

(These changes have been made in price tables)

S. O. New Jersey—Esso Gasoline:
Wheeling t. w. up 0.5c Apr. 19.

S. O. New Jersey—Kerosine:
Atlantic City & Newark up 0.2c Apr. 23.

Socony-Vacuum—Mobilgas:
Prices up Apr. 23 in amounts ranging from 0.2c to 0.4c at New York City, Mt. Vernon, all Me., Mass., N. H., & R. I. points; Albany dealer t. w. cut 0.4c Apr. 24.

Atlantic Refining—White Flash Gasoline:
Erie t. c. cut 1c Apr. 12; t. w. up 0.8c at New Jersey points Apr. 26; Wilmington, N. C. t. w. up 0.4c Apr. 22; Brunswick t. w. cut 0.5c Apr. 17.

Atlantic Refining—Kerosine:
Philadelphia, Atlantic City, Camden, & Trenton up 0.5c Apr. 25; Hartford cut 0.2c Apr. 16; Wilmington, N. C. up 0.3c Apr. 14.

S. O. Nebraska—Red Crown Gasoline:
Omaha dealer cut 1.5c Apr. 14; Scottsbluff t. w. & dealer cut 0.5c Apr. 17.

S. O. California—Gasoline:
Standard & Flight up 0.5c at all points Apr. 24.

CRUDE OIL PRICES

Prices in $ per bbl. of 42 U. S. gals. at the well. A. P. I. gravity. Prices are effective as of 7 a. m. of dates as given

EASTERN & CENTRAL STATES FIELDS

PENNSYLVANIA GRADE

Posted by Jos. Seep Purch. Agency (Apr. 23, '41)

Bradford-Allegany $2.40
Southwest Penna. $2.05
Eureka (West Va.) $1.99
Corning, O. (Apr. 1, '41) $1.17

Posted by Tide Water Assoc. Oil Co. (Apr. 23, '41)

Bradford-Allegany $2.40

Posted by The Pennzoil Co., (Apr. 23, '41)

National Transit $2.33*

Posted by Valvoline Pipe Lines (Jan. 27, 1941)

Bradford (Elk & McKean Counties, Pa.) $2.30
Warren, Forest, Venango, Clarion & Butler Counties, Pa. $2.23
Allegheny, Beaver, Washington & Greene Counties, Pa. $1.95
West Virginia $1.89
South Eastern Ohio $1.85

*Applies to Cochran, Franklin, Hamilton & Doolittle districts; prices in other lower districts range down to $2.28 per bbl. at well.

MICHIGAN

Posted by Pure Oil Co. (April 1, '41)

Midland, Midland County $1.27
Sherman, Clare-Freeman $1.22

Posted by Simrall Corp. (April 1, '41)

Greendale, Porter, Vernon, Crystal & Wise $1.27
Buckeye, Bentley, Edenville, Beaverton & Monitor (sweet crude type) $1.25
Freeman, Redding, Lincoln & Winterfield $1.22
West Branch-Arenac $1.07
Hamilton-Grout $1.12

Posted by Sohio Corp. (Mich. Div.)

Traverse crude in Allegan, Kent, Ottawa & Van Buren Cos. (April 3, '41) $1.28
Trenton crude, Monroe Co. (April 3, '41) $1.22

Posted by Bay Pipe Line Corp. (April 1, '41)

Saginaw & Wise $1.27
Buckeye, Bentley & Kawkawlin $1.25
Clare $0.96
Adams $1.10

ILLINOIS-INDIANA-KENTUCKY-OHIO

Posted by Sohio Corp.

Illinois Basin, including Griffin pool (Apr. 28, '41) $1.27
Carmi Storms, Ill. area (April 10, '41) 1.17
Birk City, Ky. area (April 18, '41) 1.17
Corydon, Ky. area, Henderson (April 18, '41) 1.17

Posted by Ohio Oil Co. (Apr. 28, '41)

Illinois Basin $1.27
Eastern Ill. & Western Ind. 1.12

Posted by Carter Oil Co. (April 1, '41)

Louden, Fayette Co. Ill. $1.22

Posted by Mohawk Oil Lines, Inc. (April 10, '41)

Southern Illinois $1.22

Posted by Ashland Oil & Transp. Co.
Somerset oil in Ash. Lines, Ky.: (Aug. 21, '40)

Big Sandy River $1.12
Kentucky River $1.20

Posted by Owensboro-Ashland Co.

Owensboro, Ky. area (April 18, '41) $1.17

Posted by S. O. Ohio (April 1, '41)

Lima, O. $1.05
Cleveland, Lodi & Chatham (O.) areas $1.10

MID-CONTINENT

OKLAHOMA-KANSAS-NORTH TEXAS

(See below for companies posting and dates)

Gravity	Schedule No. 1	Schedule No. 2	Schedule No. 3	Schedule No. 4	Schedule No. 5
Below 21	$0.75	$0.65	....	$0.60	$0.68
21-21.9	.77	.68	....	.63	.70
22-22.9	.79	.71	....	.66	.72
23-23.9	.81	.74	....	.69	.74
24-24.9	.83	.77	....	.72	.76
25-25.9	.85	.80	$0.63	.75	.78
26-26.9	.87	.83	.68	.78	.80
27-27.9	.89	.86	.73	.81	.82
28-28.9	.91	.89	.78	.84	.84
29-29.9	.93	.92	.83	.87	.86
30-30.9	.95	.95	.87	.90	.88
31-31.9	.97	.97	.91	.92	.90
32-32.9	.99	.99	.95	.94	.92
33-33.9	1.01	1.01	1.01	.96	.94
34-34.9	1.03	1.03	1.03	.98	.96
35-35.9	1.05	1.05	1.05	1.00	.98
36-36.9	1.07	1.07	1.07	1.02	1.00
37-37.9	1.09	1.09	1.09	1.04	1.02
38-38.9	1.11	1.11	1.11	1.06	1.04
39-39.9	1.13	1.13	1.13	1.08	1.06
40 & above	1.15	1.15	1.15	1.10	1.08

Above schedules posted by:

No. 1: S. O. Indiana April 1, '41 in Okla. & Kans. Continental Apr. 1, '41 in Okla. & Kans. with lowest grade Below 29 at $0.91.

No. 2: Carter & Magnolia Apr. 1, '41 in Okla. **Shell** Apr. 1, '41 n Okla. & Kans. (exclusive of Carter Co., Okla.)

No. 3: Sinclair-Prairie Apr. 1, '41 in Okla. & Kans.

No. 4: Shell Apr. 1, '41 in Carter Co., Okla.

No. 5: Stanolind Apr. 1, '41 in N. Texas. **Magnolia** Apr. 1, '41 in N. & N. Central Texas. **The Texas Co.** Mar. 29, '41 in N.-N. Central Texas. **Sinclair-Prairie** Apr. 1, '41 in Mexia & N. Central Texas. **Continental** Mar. 29, '41 in N. Texas. **Magnolia, Sinclair-Prairie, & Continental** schedules begin with Below 29 at $0.84. Texaco schedule begins with 28-28.9 at $0.84.

TEXAS & NEW MEXICO FIELDS

Posted by Humble Oil & Refining Co.—(March 29, 1941)

Gravity	Refugio	Texas Gulf Coast	Mirando	Anahuac	Dickinson	East Central Texas	West Central Texas	Panhandle, W. Texas & New Mex.	Hawkins Texas
Below 20	$0.98	$0.96	$0.93	$0.88	$0.83	....	....	$0.60	$0.73
20-20.9	1.00	.98	.95	.90	.85	....	....	.62	.75
21-21.9	1.02	1.00	.97	.92	.87	....	....	.64	.77
22-22.9	1.04	1.02	.99	.94	.89	....	....	.66	.79
23-23.9	1.06	1.04	1.01	.96	.91	....	....	.68	.81
24-24.9	1.08	1.06	1.03	.98	.93	....	....	.70	.83
25 & above	....	....	....	....	....	....	....	....	.85
25-25.9	1.10	1.08	1.05	1.00	.95	$0.87	$0.78	.72	....
26-26.9	1.12	1.10	1.07	1.02	.97	.89	.80	.74	....
27-27.9	1.14	1.12	1.09	1.04	.99	.91	.82	.76	....
28-28.9	1.16	1.14	1.11	1.06	1.01	.93	.84	.78	....
29-29.9	1.18	1.16	1.13	1.08	1.03	.95	.86	.80	....
30-30.9	1.20	1.18	1.15	1.10	1.05	.97	.88	.82	....
31-31.9	1.22	1.20	1.17	1.12	1.07	.99	.90	.84	....
32-32.9	1.24	1.22	1.19	1.14	1.09	1.01	.92	.86	....
33-33.9	1.26	1.24	1.21	1.16	1.11	1.03	.94	.88	....
34-34.9	1.28	1.26	1.23	1.18	1.13	1.05	.96	.90	....
35-35.9	1.30	1.28	1.25	1.20	1.15	1.07	.98	.92	....
36-36.9	1.32	1.30	1.27	1.22	1.17	1.09	1.00	.94	....
37-37.9	1.34	1.32	1.29	1.24	1.19	1.11	1.02	.96	....
38-38.9	1.36	1.34	1.31	1.26	1.21	1.13	1.04	.98	....
39-39.9	1.38	1.36	1.33	1.28	1.23	1.15	1.06	1.00	....
40 & above	1.40	1.38	1.35	1.30	1.25	1.17	1.08	1.02	....

Refugio: Includes crude purchased in East White Point, Greta, Melon Creek, O'Connor-McFaddin, Plymouth, Saxet, Taft, & Tom O'Connor fields.

Texas Gulf Coast: Includes crude purchased in Amelia, Clear Lake, Goose Creek, Hastings, Magnet, Mykawa, Mykawa New, Raccoon Bend, South Thompsons, Sugarland, Thompsons, & Webster fields.

Mirando: Includes crude purchased in Blanchard, Bridwell, Colorado, Comitas, Eagle Hill, Escobas, Fitzsimmons, Glen, Government Wells (North & South), Heyser, Hoffman, Kelsey, Kohler, Loma Novia, Lundell, Manila, Mirando Valley, Placedo, Randado, Sarnosa, & Tesoro fields.

Anahuac: Includes crude purchased in Anahuac, Angleton, Cedar Point, Fishers' Reef, Hull (Old & New), Pierce Junction, Red Fish Reef, & Turtle Bay fields.

Dickinson: Includes crude purchased in Dickinson, Gillock, Hardin, League City, & Rowan fields.

East Central Texas: Includes crude purchased in Anderson, Cherokee, Limestone, & Navarro Counties, and Navarro Crossing field.

West Central Texas: Includes crude purchased in Brown, Callahan, Comanche, Eastland, Fisher, Haskell, Jones, Shackelford, Stephens, & Throckmorton Counties.

Panhandle, West Texas & New Mexico: Includes crude purchased in Carson, Gray, Hutchinson & Wheeler Counties; Andrews, Crane, Crockett, Ector, Gaines, Glasscock, Howard, Reagan, Upton, Winkler, & Yoakum Counties, Texas; Lea County, N. M.

Hawkins: Includes crude purchased in Hawkins Field, Wood County, Texas.

Conroe $1.33
Tomball 1.30
Van 0.98
Talco 0.72
East Texas & Flag Lake $1.15
Flour Bluff, E. Flour Bluff 1.23
Salt Flat, N. Salt Flat 1.04
Darst Creek, Hilbig, Carroll 1.04
Clark, Zoboroski $1.04
Alice, Benavides (N. Sweden), Sun 1.25
Ben Bolt, Clark-Muil, Tom Graham 1.25
Yates (Pecos) 0.85

MAGNOLIA PETROLEUM CO.

(April 1, '41)

Panhandle, Tex.—Same as Humble except Magnolia begins with Below 29 at $0.78.

West Texas—In Crane, Upton, Howard, Glasscock, Mitchell, Winkler, Cochran, Hockley, Yoakum & Gaines Cos.—Same as Humble except Magnolia begins with Below 25 at $0.70.

N. Mexico—In Lea Co.—Same as Humble except Magnolia begins with Below 25 at $0.70 & ends with 36 & above at $0.94.

Cass & Panola Cos., Tex.—Below 25 at $0.78, plus 2c per degree of gravity to 40 & above at $1.10.

Mirando, Tex.—Same as Humble.

East Texas $1.15
Darst Creek 1.04
Luling ..... .95
Lytton Springs $1.07
Cleveland-Liberty Co. 1.16
Tomball 1.30
Talco ..... .72

SINCLAIR-PRAIRIE OIL MARKETING CO.

(April 1, '41)

West Texas, Texas Panhandle & Lea Co., N. M.—Same as Humble except Sinclair-Prairie begins with Below 25 at $0.70.

Texas Gulf Coast—Same as Humble.

East Texas $1.15
Eddy Co., N. M. ..... .84
Long Lake, Tex. $1.13

STANOLIND OIL PURCHASING CO.

(April 1, '41)

Clinton, Tex.—Same as Humble, Tex. Gulf Coast except Stanolind begins with Below 21 at $0.98.

Fairbanks, N. Houston & Rosslyn Tex.—Same as Humble Dickinson schedule.

E. Texas $1.15
Satsuma & Tomball, Tex. $1.30

STANOLIND OIL & GAS CO.

(April 1, '41)

W. Beaumont, Jefferson Co., Tex.—Same as Humble Tex. Gulf Coast.

Spindletop, Jefferson Co. & High Island, Galveston Co., Tex.—Same as Humble Tex. Gulf Coast except Stanolind begins with Below 21 at $0.98.

Hendrick & Henderson, Winkler Co., Tex.—Same as Humble Panhandle except Stanolind begins with Below 26 at $0.72.

THE TEXAS CO.

(March 29, '41)

Panhandle, Tex.—Same as Humble except Texaco begins with 34-34.9.

W. Texas & Lea Co., N. M.—Same as Humble except Texaco begins with 23 & below at $0.68 and ends with 36 & above at $0.94.

Texas Gulf Coast—Same as Humble except Texaco ends with 34 & above at $1.26.

Duval-Mirando, Tex.—Same as Humble Mirando except Texaco ends with 28-28.9 at $1.11.

Refugio, Tex.—Same as Humble except Texaco ends with 28-28.9 at $1.16.

East Texas $1.15
Darst Creek, Tex. 1.04
Hockley & Cochran Cos., Tex. ..... .77
Cass Co., Tex. $1.10
Conroe, Tex. 1.33

SHELL OIL CO., INC.

(March 29, '41)

West Texas & Lea Co., N. M.—Same as Humble except Shell ends with 36 & above at $0.94.

Fisher Co., Tex.—Same as Humble W. Centra Texas except Shell begins with Below 25 at $0.76.

East Texas $1.15
Livingston area, Polk Co., Tex. 1.15
Pecos Co., Tex., except Yates Shallow pool $0.85
Pecos Co., Yates Shallow pool ..... .72

CONTINENTAL OIL CO.

(Mar. 29, '41)

Carson & Hutchinson Cos., Tex.—Same as Humble Panhandle except Continental begins with Below 29 at $0.78.

Mirando, Tex.—Same as Humble except Continenta begins with Below 21 at $0.95.

Wade City, Tex.—Same as Humble Refugio except Continental begins with Below 21 at $1.00.

Clara Driscoll, Tex.—Same as Humble Refugio except Continental begins with Below 21 at $1.00 and ends with 30 & above at $1.20.

Alfred & Magnolia City, Tex., $1.15.

Eddy Co., N. M.—Below 29 at $0.68, plus 2c per degree of gravity up to 40 & above at $0.92.

PAN AMERICAN PIPE LINE CO.

(Apr. 1, '41)

Hastings & S. Houston, Tex.—Same as Humble Tex. Gulf Coast except Pan Am. begins with Below 21 at $0.98.

East Texas $1.15
Cayuga (Anderson, Freestone & Henderson Cos., Tex.) ..... .85

CRUDE OIL PRICES

CALIFORNIA

Posted by S.O. California, April 24, 1941

(All gravities above those quoted take highest price offered in that field)

Gravity	Signal Hill (Long Beach)	Wilmington	El Segundo	Seal Beach	Huntington Beach	Inglewood	Olinda Brea Canon	Athens-Rosecrans	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	Greeley, Canal, Waseo	Coles Levee	Mountain View	Elk Hills, Buena Vista Hills, Midway-Sunset, Lakeview Area	Lost Hills	Coalinga
14-14.9		$0.63			$0.65		$0.65		$0.66	$0.65	$0.65	$0.67						$0.68	$0.68	$0.68
15-15.9		.64			.68	$0.70	.65		.67	.65	.66	.67						.68	.68	.68
16-16.9		.65	$0.73		.70	.73	.66		.69	.66	.68	.67						.68	.68	.68
17-17.9		.68	.75		.73	.76	.68		.70	.68	.71	.67						.68	.72	.68
18-18.9	$0.74	.71	.77		.75	.79	.71		.72	.71	.74	.67						.72	.75	.68
19-19.9	.78	.75	.80		.79	.82	.75		.75	.73	.77	.68					$0.68	.75	.78	.68
20-20.9	.82	.80	.84		.83	.86	.79		.79	.76	.81	.70					.70	.79	.81	.70
21-21.9	.86	.85	.88		.87	.89	.82		.84	.79	.85	.74					.73	.84	.84	.73
22-22.9	.90	.89	.91	$0.77	.91	.92	.86		.88	.83	.89	.78					.76	.88	.87	.77
23-23.9	.94	.93	.94	.83	.94	.95	.89		.93	.88	.93	.82					.80	.93	.90	.80
24-24.9	.97	.97	.98	.88	.98	.98	.93		.97	.92	.97	.86	$0.93				.84	.97	.93	.83
25-25.9	1.01	1.02	1.02	.94	1.02	1.01	.97		1.00	.96	1.01	.90	.96				.88	1.01	.95	.86
26-26.9	1.05	1.06	1.05	.99	1.05	1.04	1.01		1.03	1.01	1.05	.94	1.00				.91	1.06	.98	.89
27-27.9	1.09	1.10	1.08	1.04	1.09	1.08	1.04		1.07	....	1.09	.98	1.04				.95	1.10	1.01	.92
28-28.9	1.13	1.14	1.11	1.08	1.12	1.11	1.07		1.10	....	....	1.01	1.07	$1.01	....	....	.99	1.14	1.04	.95
29-29.9	1.16	1.17	....	1.13	1.15	1.14	....	$1.10	....	....	....	1.05	1.11	1.05	....	....	1.02	1.19	1.06	.97
30-30.9	1.20	1.21	....	....	1.19	1.17	....	1.15	....	Elwood	....	1.08	1.15	1.09	$0.95	$1.03	1.05	1.23	1.09	1.00
31-31.9	....	....	....	....	....	1.20	....	1.19	....	Terrace	....	1.12	1.18	1.13	.99	1.06	1.09	....	....	1.02
32-32.9	....	....	....	....	....	....	....	1.24	....	F.o.b. Ship	....	1.16	1.22	1.17	1.02	1.09	1.12	....	....	1.05
33-33.9	....	....	....	....	....	....	....	1.28	....	$1.19	....	1.20	....	1.21	1.05	1.12	....	....	....	1.07
34-34.9	....	....	....	....	....	....	....	1.32	....	1.23	....	1.25	....	1.25	1.09	1.15	....	....	....	1.10
35-35.9	Kettleman Hills	....	....	....	....	....	....	....	....	1.26	....	1.30	....	....	1.12	1.18	....	....	....	....
36-36.9	....	1.19	....	....	....	....	....	....	....	....	....	1.34	....	....	1.16	1.21	....	....	....	....
37-37.9	....	1.23	....	....	....	....	....	....	....	....	....	1.39	....	....	1.19	....	....	....	....	....
38-38.9	....	1.26	....	....	....	....	....	....	....	....	....	1.43	....	....	1.22	....	....	....	....	....
39-39.9	....	....	....	....	....	....	....	....	....	....	....	1.47	....	....	....	....	....	....	....	....
40-40.9	....	....	....	....	....	....	....	....	....	....	....	1.50	....	....	....	....	....	....	....	....

Playa Del Rey: (FOB Standard Pipe Line) 20-20.9, $0.75; 21-21.9, $0.79; 22-22.9, $0.82.
Wheeler Ridge: 22-22.9, $0.71; 23-23.9, $0.74; 24-24.9, $0.77.
Newhall, Kern River, Kern Front, McKittrick & Round Mountain: 14-14.9, $0.68.

LOUISIANA-ARKANSAS

Posted by S. O. Louisiana, Apr. 1, '41

Gravity	Ark. Atlanta, et al.	La. Caddo, et al.	La. Rodessa, et al.	La. Bunkie, et al.	La. Darrow, et al.	La. University (Baton Rouge)
40 & above	$0.98	$1.08	$1.10	$1.20	$1.20	....
39-39.9	.96	1.06	1.08	1.18	1.18	....
38-38.9	.94	1.04	1.06	1.16	1.16	....
37-37.9	.92	1.02	1.04	1.14	1.14	....
36-36.9	.90	1.00	1.02	1.12	1.12	....
35-35.9	.88	.98	1.00	1.10	1.10	....
35 & above	....	....	....	....	....	$1.26
34-34.9	.86	.96	.98	1.08	1.08	1.24
33-33.9	.84	.94	.96	1.06	1.06	1.22
32-32.9	.82	.92	.94	1.04	1.04	1.20
31-31.9	.80	.90	.92	1.02	1.02	1.18
30 & below	....	....	....	....	....	1.16
30-30.9	.78	.88	.90	1.00	1.00	....
29-29.9	.76	.86	.88	.98	.98	....
28-28.9	.74	.84	.86	.96	.96	....
27-27.9	.72	.82	.84	.94	.94	....
26-26.9	.70	.80	.82	.92	.92	....
25-25.9	.68	.78	.80	.90	.90	....
Below 25	....	.76	.78	.88	....	....
24-24.9	.66	....	....	....	.88	....
23-23.9	.64	....	....	....	.86	....
22-22.9	.62	....	....	....	.84	....
21-21.9	.60	....	....	....	.82	....
Below 21	.58	....	....	....	.80	....

Atlanta schedule includes Buckner, Magnolia, Village & Schuler (Jones Sand), Ark.

Caddo schedule includes De Soto, Sabine, Fouke, Homer, Miller Co., & Sugar Creek.

Rodessa schedule includes Cotton Valley & Shreveport (Cross Lake).

Bunkie schedule includes Eola & Olla.

Darrow schedule includes Bayou Mallet, Choctaw, Jeanerette, Lirette, N. & S. Crowley, Port Barre, Potash, Roanoke, & St. Martinville.

Big Creek, Dorcheat, McKamie Distillates (Sour) $1.05
Heavy Smackover Crude ..... .76
Cotton Valley Distillate 1.20
Cotton Valley (Holloway Sand Crude) 1.15

(Continued in next column)

LOUISIANA-ARKANSAS (Cont'd)

Posted by Shell Oil Co., Inc. (Apr. 1, '41)

Iowa District, La.

Below 18	$0.80	23-23.9	$0.94	29-29.9	$1.09	
18-18.9	.82	24-24.9	.97	30-30.9	1.11	
19-19.9	.84	25-25.9	1.00	31-31.9	1.13	
20-20.9	.86	26-26.9	1.03	32-32.9	1.15	
21-21.9	.88	27-27.9	1.05	33-33.9	1.17	
22-22.9	.91	28-28.9	1.07	34 & above	1.19	

Roanoke District, La.

Below 18	$0.75	23-23.9	$0.89	29-29.9	$1.04	
18-18.9	.77	24-24.9	.92	30-30.9	1.06	
19-19.9	.79	25-25.9	.95	31-31.9	1.08	
20-20.9	.81	26-26.9	.98	32-32.9	1.10	
21-21.9	.83	27-27.9	1.00	33-33.9	1.12	
22-22.9	.86	28-28.9	1.02	34 & above	1.14	

Black Bayou & White Castle Districts, La.—Same as Iowa District, except Black Bayou, etc. begins with Below 20 at $0.84.

Gibson field, Terrebonne Par. La. $1.09
Happytown field, St. Martin Par., La. 1.05

Posted by Arkansas Fuel Oil Corp.

Urania, La. (Apr. 1, '41) $1.05

Posted by Continental Oil Co. (Apr. 1, '41)

Tepetate, La. $1.08
Ville Platte, La. 1.10
Lake Arthur, La. 1.08

Abbeville, La.

Below 36	$0.97	37-37.9	$1.01	39-39.9	$1.05	
36-36.9	.99	38-38.9	1.03	40 & above	1.07	

CANADIAN FIELDS

Posted by Imperial Oil Limited Western Ontario (Nov. 6, 1939)

Petrolia ..... $2.10 Oil Springs $2.17

Turner Valley Crude Oil (Sept. 12, '40)

(Prices FOB producer's tankage)

33-33.9	$1.08	44-44.9	$1.30	55-55.9	$1.52	
34-34.9	1.10	45-45.9	1.32	56-56.9	1.54	
35-35.9	1.12	46-46.9	1.34	57-57.9	1.56	
36-36.9	1.14	47-47.9	1.36	58-58.9	1.58	
37-37.9	1.16	48-48.9	1.38	59-59.9	1.60	
38-38.9	1.18	49-49.9	1.40	60-60.9	1.62	
39-39.9	1.20	50-50.9	1.42	61-61.9	1.64	
40-40.9	1.22	51-51.9	1.44	62-62.9	1.66	
41-41.9	1.24	52-52.9	1.46	63-63.9	1.68	
42-42.9	1.26	53-53.9	1.48	64 & over	1.70	
43-43.9	1.28	54-54.9	1.50			

Absorption Gasoline (Jan. 5, 1938)

90% Rec., 20 lb. Reid v.p. $1.94
90% Rec. 17 lb. Reid v.p. $2.08

ROCKY MOUNTAIN FIELDS

Posted by Stanolind Oil & Gas Co. (Oct. 11, '38, except Tensleep Feb. 1, '41, and Frannie Light, Grass Creek Heavy, Hamilton Dome, & Hes Apr. 1, '41)

Salt Creek (except Tensleep crude), Midway & Dutton Creek, Wyo.

Below 29	$0.86	32-32.9	$0.94	36-36.9	$1.02	
29-29.9	.88	33-33.9	.96	37-37.9	1.04	
30-30.9	.90	34-34.9	.98	38-38.9	1.06	
31-31.9	.92	35-35.9	1.00	39-39.9	1.08	
				40 & above	1.10	

Wyoming:		Wyoming:	
Tensleep Crude	$0.6515	Grass Creek Light	$0.90
Frannie Light	.65	Grass Creek Heavy	.45
Frannie Heavy	.42	Elk Basin	.90
Hamilton Dome	.40	Hes, Colo.	.97

Posted by S. O. Indiana (June 5, '39)

Lance Creek, Wyo. $0.77

Posted by Ohio Oil Co. (Oct. 11, '38)

Elk Basin, Wyo. $0.90
Grass Creek, Wyo. Light ..... .90
Rock Creek, Wyo. (April 1, '41) 1.05
Lance Creek, Wyo. (April 1, '41) ..... .82
Dry Creek, Mont. ..... .92
Sunburst, Mont. (Nov. 16, '37) ..... .90

Posted by Continental Oil Co. (April 1, '41) Ft. Collins & Wellington, Col.

Below 29	$0.86	32-32.9	$0.94	36-36.9	$1.02	
29-29.9	.88	33-33.9	.96	37-37.9	1.04	
30-30.9	.90	34-34.9	.98	38-38.9	1.06	
31-31.9	.92	35-35.9	1.00	39-39.9	1.08	
				40 & above	1.10	

Canon City & Florence, Col. $0.95
Cat Creek, Mont. .. 1.17
Big Muddy, Wyo. .. $0.98
Lance Creek, Wyo. .. .82

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· PERSONALS ·

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While NPN's staff writers follow your business activities 5 or 6 days each week, we're not keyhole or even golf green snoopers. Consequently, we don't know what you're doing aside from business—but we're interested. Thinking you might be willing to share this knowledge with the industry, why not tell us about your trips (business and pleasure) as well as parties. Drop us a note on your oil company's letterhead. We'll be watching our mail.

* * *

Donald G. Clark, Gulf Oil Corp., now working in the Priorities Division of the Office of Production Management at Washington, will be among speakers at the 26th annual convention of the National Assn. of Purchasing Agents, May 26-29.

* * *

J. Willard Lord, safety engineer of the Atlantic Refining Co., served on a panel of safety experts in a commercial vehicle safety quiz conducted at Hotel Pennsylvania, New York, on April 23, during the 12th Annual Safety Convention and Exposition sponsored by the Greater New York Safety Council.

* * *

Milton H. Eames, secretary of the Standard Oil Co. of New Jersey, assistant secretary of the Standard Oil Co. (N. J.), the parent company, and secretary and director of several affiliated companies, has completed 40 years of company service. Working from the bottom, Mr. Eames started his long career at 26 Broadway as an office boy in 1901 and after serving clerkships in the comptrolling and statistical departments, became assistant to **C. T. White,** then secretary of the company. Three years later, he was appointed assistant secretary of the parent company and in 1928 was named as secretary of the Creole Petroleum Co., a Jersey Company affiliate. In 1932, Mr. Eames became secretary of the New Jersey Standard, marketing company, and in 1933 was appointed secretary of several Jersey company affiliates. He is also a director of the Standard Oil Co. of Brazil.

* * *

C. R. "Bill" Kerr, Bradford, Pa., is the new sales manager of Bradford Oil Refining Co. An oil industry veteran. Mr. Kerr plans to spend a few days each week in Bradford, and the remainder of the week at other company outlets in Pennsylvania and New York.

* * *

E. A. Gabriel, Vicksburg, Miss., is now associated with E. C. Johnson, oil producer and refiner. Mr. Gabriel was formerly with the Chicago division of Shell Oil Co.

* * *

For driving a total of 2,000,000 miles without an accident, 9 Freedom Oil Co. truck drivers were recently awarded safe drivers' emblems by **Earle M. Craig,** Freedom, Pa., president and **R. E. Neeley,** bulk plant manager. See photo below.

Seated left to right: G. W. McKee, Ralph E. Neeley, bulk plant manager, Earle M. Craig, Freedom Oil Co. president, J. G. McCaw, L. C. Smith and A. D. Cowdery; standing left to right: J. A. Peggs, Warren Miller, P. H. Shreeve, John Ewing and A. R. Vale

C. F. Roach C. N. Olson

Off to do his bit for national defense is **C. N. Olson,** above, former Shell Oil Co. salesman at Champaign, Ill. The man in mufti is **C. F. Roach,** area manager. Mr. Olson is Shell's first man to receive military leave allowance in the Chicago division. He is stationed at Chanute Field, Rantoul, as Post Exchange Officer.

* * *

Edwin W. Pauley, Los Angeles, president of The Petrol Corp., has been appointed Democratic manager for 6 western states by Edward J. Flynn, chairman of the National Democratic committee. The states are: California, Oregon, New Mexico, Arizona, Nevada and Washington.

* * *

With the recent resignation of **G. W. Coldsnow,** manager Standard Oil Co. of Indiana, manager at La Crosse, Wis., four managers, an assistant manager and a sales promoter in the general office figured in the change. These changes, as announced by **Edward G. Seubert,** president, are:

R. S. Orr, Indianapolis manager, became La Crosse manager; **R. F. Baity,** Davenport manager became Indianapolis manager; **J. W. Honomichl,** Duluth manager, became Davenport manager; **C. M. Monson,** Joliet manager, became Duluth manager; and **C. E. Quinn,** Detroit assistant manager-reseller, became Joilet manager.

Another honor was added to the long list of those garnered by Dr. Gustav Egloff, Chicago, director of research for Universal Oil Products Co., when the Western Society of Engineers awarded him the Octave Chanute medal for 1939-40. Presentation of the medal, which was awarded for his paper on "Motor Fuels of the Present and Future", was made by J. Paul Clayton.

Refining Technology

INCLUDING INTERNATIONAL PETROLEUM TECHNOLOGY

REFINING PROBLEMS A conspicuous lack of papers and discussions of refining methods and problems in the programs of the National Petroleum Association and Western Petroleum Refiners Association, meeting last week and the week before, as compared to previous years, indicates a tendency of the oil industry to lean over backwards with respect to war censorship. New refining processes for making aviation fuel for defense is just one small phase of petroleum refining. Many other problems which have no relation to defense are in need of solution and are of interest to refiners. Corrosion, inspection, safety, cleaning, cooling water problems, new types of equipment, advances in automatic control, power supply, treating problems, and many others are still of as much concern to refiners as before.

Instead of refining problems, motor fuel and lubricant quality have been pounced upon by these and other petroleum and technical associations until the industry has become centered on anti-knock quality and heavy duty characteristics.

There are refining problems that can be discussed with greater mutual benefit, without disclosing defense secrets and without stimulating an exhausting struggle to make unnecessarily high octane gasoline and super duty motor oils.

★ ★ ★

NEW OIL SOURCES An oil yield of one-third to one-half ton per ton of coal, obtained by the Bureau of Mines in recently announced tests should give reassurance to many who have been greatly concerned over the future of our sources of oil and motor fuel. The Bureau gives further reassurance by pointing out that our estimated coal reserves would yield enough oil to last 3000 years at the present rate of consumption.

The Bureau of Mines has been doing a great service by classifying all coals as to their yield of oil and even studying their possible yield of other bulk chemicals since these may have an important bearing on the commercial feasibility of starting coal hydrogenation plants in this country. The Bureau is also studying developments in production of power alcohol and production of shale oil to aid American industry in choosing, not only between coals for hydrogenation but between several substitute sources of oil and motor fuel.

★ ★ ★

ENGINEERING CURRICULA Judging by the evidence presented in its eighth annual report, the Engineers' Council for Professional Development has done a remarkable job of maintaining high standards in engineering school curricula. This has been the only task assigned to this council by the eight participating engineering societies representing 70,000 members. This council has the further objectives of improving the vocational orientation of young men who want to be engineers, of developing graduate engineers, and of finding methods whereby engineers may receive suitable professional recognition.

The work of this council should be of more interest to petroleum engineers, refiners, and petroleum chemical engineers than is indicated by the one or two representatives of the oil industry in the group of 103 who have given their time to this work. Petroleum engineering curricula have been examined by the council and 10 out of 13 curricula have been accredited unconditionally. One of two petroleum refining curricula is accredited. The committees are composed largely of university men of high standing in engineering schools. They depend on the industries to help arrange curricula.

While the broad field of chemical engineering is well represented on the council, the petroleum industry is far from being represented in the proportion of men who are engaged in petroleum engineering and research. Although two of the sponsoring associations have petroleum divisions, no petroleum association is among the sponsoring group.

★ ★ ★

AERO-DIESEL DISCOUNTED British opinion of the diesel in aerial navigation, as expressed by the Diesel Engine Users' Association in a comprehensive review of diesel engine and fuel progress in 1939 reported in a recent issue of "The Petroleum Times", gives a very low rating to this combination in comparison with aircraft gasoline engines operating on 100-octane fuel.

Nothing of importance was said to have been developed in diesel aero engines during the year and "from this viewpoint there is little immediate prospect of the production of an engine giving a performance approaching within 20% of that of the gasoline engine operating on 100-octane fuel."

Say these British authorities, the latest types of 100-octane aircraft engines have a power-weight ratio approaching 1 hp./lb. weight whereas "the diesel engine is hard put to it to give ½ hp./lb." Only in long-range flying can the compression-ignition engine justify itself, it is pointed out, and even the fuel consumption figures for transatlantic flights show but a slight advantage in favor of the diesel.

Since this report is published under stress of war-time conditions, the question might be raised whether opinions would be at least slightly biased, in view of concentration of aircraft diesel utilization in Germany. Performance of only 20% is the opposite extreme of reports to the Society of Automotive Engineers a year ago when one speaker reported 90-95%. The fact that the U. S. air force is concentrating on engines using 100-octane fuel is proof enough of where superiority lies, for in spite of occasional reports to the contrary, much government investigation and research has been directed toward the possibilities of the diesel in aviation.

Develop Interior Coatings For Aviation Fuel Drums

By M. G. Van Voorhis

ABSTRACT

Increased utilization of steel drums for handling and storing aviation gasoline has stimulated development of improved protective coatings for their interiors to prevent contamination of gasoline with iron rust or zinc oxide particles resulting from the unavoidable presence of moisture. Satisfactory coatings make inexpensive drums practical for long-time storage.

Improved coatings have come into use but tests are still in progress to develop still better coating materials. Possible defense usage has aroused government interest and oil companies, drum manufacturers, chemical firms, paint manufacturers, and others are taking part in the development. Lecithin, a chemical, is also being added to gasoline for this purpose.

THE development of coatings for the interior of steel drums used for handling aviation gasoline has received considerable impetus as the result of increased requirements for export and probable increased usage for defense purposes. Major oil companies, drum manufacturers, the Bureau of Standards, certain chemical and paint manufacturers, and others are taking part in the development of improved coatings which will make it possible to use inexpensive containers for long time storage. According to one report, such containers have been suggested for distributing 100-octane fuel over the United States so that it would be immediately available wherever an emergency landing might be made by military aircraft.

The problem is not a new one and considerable work has been done by the major oil companies in developing and testing coating materials. This work has been intensified recently and it is reported that much more satisfactory linings have come into use in the past few months than were previously available. However, research is still in progress in the hope of developing still better coating materials.

It is the ever-present corrosion problem showing up in one of its many forms that makes coatings necessary. Despite all efforts to keep moisture outside of these drums, it gets in in sufficient quantity to do its work on the exposed metal, it is said. Even galvanized steel drums are affected, white zinc oxide forming as the result of attack by this moisture on the zinc. Another factor which makes this oxide formation serious is that the gasoline is expected to stay uncontaminated for 16 to 18 months or even longer.

Air transport companies go to extreme lengths to prevent any dirt or particles of metal oxides getting into airplane tanks. Under carefully controlled conditions, straining will effectively remove all such particles but circumstances might arise where a strainer would not be available or there would be no time to use it. A particle of iron rust or zinc oxide in a carburetor jet is serious in an airplane and the problem is recognized in the manufacture of airplane gasoline tanks.

Many Coatings Tried

Various types of coatings have been used. The first tests were made on coatings already developed for the food industries and for chemical containers. Many of them are called lacquers and are composed principally of resins. One drum manufacturer has substituted terneplate for galvanizing and reports less corrosion. This is a lead coating containing a small proportion of tin. The improved results are attributed partially to the fact that tetraethyl lead in the gasoline is less reactive in the presence of lead than with zinc.

One of the reasons for the present activity in developing better coatings was expressed by one oil company that found "most coatings go sour when a dent is made in the drum body." Brittleness of the coating film is said to be responsible for cracking the coating and resultant access of moisture to the metal underneath. As a part of the test procedure for coatings this company has worked out a schedule of testing during which denting the side of the drum plays an important part. In these tests a drum is partially filled with gasoline to which a little water has been added. This drum is allowed to set on its base for three months. It is then allowed to fall over on its side on a bar which produces a dent in the side of the drum. The drum stays on its side for another three months with the bung up, if there is a bung on the side, and then is dropped again in such manner as to get another dent and the drum rests another three months on its side with bung down. The fourth three-month period is spent bottom side up, according to the report of the test.

Another important test is the heat and cold test. In many instances drums are filled in the cold northern climate of winter and shipped to the tropics. Such conditions appear to be a severe test for gasoline drums. Tests have been devised, therefore, which simulate these conditions as much as possible. Drums of gasoline, with a little water, are allowed to stand in "cold rooms" at subzero temperature and then moved into rooms where the temperature is kept at over 100°F. or subjected to weather conditions of extreme cold and heat. In the course of these tests, the drums may be moved about from one place to another to shake up the contents.

Tests Duplicate Service

Many coatings never reach this stage of testing however. Laboratory tests may put them out of the running. One of the first tests to which a coating is subjected in the laboratory is of course resistance to gasoline. If it can't pass a simple test of this kind, it goes no further. Flexibility is another test which can be carried out in the laboratory by putting the coating on pliable steel and bending the steel after the coating is dry or hammering the reverse side for a shock test, then examining the coating for cracks. Such tests might be carried out after aging the coating in contact and out of contact with gasoline. In general these tests are intended to be as close to the normal experience of a drum in service. Most of the older resin coatings have been found to be more or less brittle

and subject to breaking or cracking, but recent work has been concentrated upon this difficulty and favorable reports have been made on new materials.

Actual service tests are also being conducted. Drums coated with various promising materials are being shipped with others to normal points of consumption and then returned for inspection after a year or more during which they have been subjected to conditions normal to drums in this service.

The lacquer-like coatings are applied generally by the barrel manufacturer, it is understood, on the inside of black-iron barrels by spraying, sometimes before the heads are put on and sometimes after completion of the drum. When done during the manufacturing process it assures protection in the seams of the chimes in case of seepage at the result of strains during handling. When sprayed after completion, the lacquer stops up the crevices around the chimes so that no metal is exposed to the contents of the drum.

Terneplate has been found to have advantages over galvanizing in corrosion resistance in the presence of gasoline. This lead coated iron sheeting is made in much the same way as galvanized. The sheet is dipped into a bath of molten lead with a small proportion of tin instead of into a bath of molten zinc. Drums made of this material are, therefore, coated on both sides thus providing protection against corrosion on the outside as well as inside.

A Coating is Coated

One of the coating treatments is unusual in that it is applied over galvanizing to prevent formation of zinc oxide. A protective film is formed by the reaction of certain simple chemicals in a solution which is brought in contact with the interior surface of the drum. The process for producing this film, which is said to be not unlike the anodized films for aluminum, was developed by the New Jersey Zinc Co. Like some of the other coatings which have been tried out, it was not developed specifically for coating gasoline drums, but particularly for coating the interior of automobile carburetors made of zinc alloy die castings or for zinc die cast parts for door-locks.

This type of coating is said to be particularly applicable to the returnable drums. The drum treating process is made a part of the cleaning procedure and can be done with automatic equipment which is in common use in many plants. The treatment, however, does not have to be done after each return of the drum but last for many trips provided the drum has not been mistreated. Since the coating is applied by the oil company, it is said to have the advantage that it can be applied more than once if it becomes damaged or ineffective by unusual circumstances.

Two types of drum cleaning equipment which are said to be adaptable to applying protective films on galvanized drums. Courtesy of The Vol-U-Meter Co. (top) and of F. Aue Co., Inc. (bottom).

A further advantage is that used drums which have never previously been treated or have been used for other products can be pressed into aviation fuel service at the refinery and perhaps save purchasing new drums for this service or save waiting for delivery if an emergency should arise.

In applying this coating to old drums, the surface is first washed with a warm acid solution of certain definite proportions which removes any zinc oxide which may be present without attacking the zinc. The procedure of applying the coating is not a fixed one. Some of the solution may be poured into the barrel which is then rolled down a wabbling incline to contact the walls and then turned head downward to empty, the time of emptying being sufficient to complete the reaction of the head. The coating is applied at room temperature and is followed by a water rinse which leaves a slimy film. This film must be dried quickly by use of an air hose.

An important characteristic of this coating, according to an authority in its use, is that the film is slightly soluble in water and consequently is self-healing, which means that an absolutely continuous film is unnecessary and rough handling will not affect the coating.

The chemicals used in treating are said to be common

Contents . . .

REFINING TECHNOLOGY

April 30, 1941

Development of coatings for the interior of steel drums has been stimulated by increased utilization of drums for handling and storage of aviation gasoline. Use of low cost drums depends on preventing formation of rust or zinc oxide particles. R-130

Recent rapid expansion of scrubbing hydrocarbons with alkaline solution for removal of sulfur makes large application for carbon in the form of Raschig rings. Properties of molded carbon and graphite have put it in service as a construction material for towers, heat exchangers, piping, pump piston rings, and many other applications. R-134

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in electroplating plants and can be bought from any chemical company at a low cost. Certain precautions, as with many other chemicals, must be observed but these details can be worked out by an oil company. This type of coating is said also to be applicable to other solvents, naphthas, alcohol, glycerine, and other chemicals in which the film is not soluble.

Improve Resin-Type Coatings

Advances in resin-type coating development are in progress in several different laboratories. Ault and Wiborg Corp. has been in this field a long time, two fellowships at Mellon Institute under the donorship of Stoner-Mudge, Inc., and Raolin Corp., have this objective as a part of its work, and at least two paint manufacturers have reported recent work along these lines with particular emphasis on flexiblity of coatings.

In the recent annual report of Mellon Institute it is stated that "of particular importance is an investigation, nearing completion, of the effect of variations in relative humidity upon the incipient corrosion of ferrous metals under continuous resin films. Many commercially available metal-pretreatment processes have been quantitatively evaluated, particularly from the standpoint of underfilm corrosion inhibition and of coating adhesion and fabrication characteristics over such passivated surfaces."

One of the paint manufacturers has a resin coating in progress of testing which shows decidedly improved flexibility and resistance to temperatures above 300°F. in the presence of active solvents. This company has already approved its use in its own containers, although tests are not yet completed. Pittsburgh Plate Glass Co. reports its technical laboratories have investigated the specific field of coatings to withstand gasoline. The company finds "it is not possible to recommend any one coating to withstand the many requirements because differences in style of container which determine the method of application or differences in service will determine the flexibility of the coating required and whether it must withstand frequent cleaning with steam or other methods.

"Heat reactive phenolic compositions are resistant to gasoline and will withstand exposure to steam but have limited flexibility. Other resin base coatings which show excellent resistance to gasoline, lubricating oils, etc., have ample flexibility but are too thermoplastic to resist steam." Where lubricating oils are being stored, cleaning of the drums with steam is not required and these coatings are said to be satisfactory. Film elasticity is recognized as a very important property of drum liners for aviation gasoline and in this connection it is pointed out that these drums must be made from cold rolled steel plate and not the cheaper hot rolled plate which has a large quantity of oxide or mill scale.

One drum manufacturer believes "there is no doubt that the present experiments and the progress that is being made by the various manufacturers of coating will result in substantial improvement in corrosion resistance in the near future, however, there are still problems of adherence, durability, and cost as well as the problem of application which varies with the type of coatings manufactured." He also mentioned a slushing compound used by the aviation industry for the interior of airplane gasoline tanks on which the results are said to be surprisingly good from the standpoint of both corrosion and solubility in gasoline.

Another manufacturer feels, from experience in other industries, that if drums can be turned over frequently and losses by theft or otherwise eliminated, returnable drums of solid stainless steel can be made to pay for themselves even though the cost is six or seven times that of hot dipped galvanized drums.

Gasoline Additive Used

Drum coatings are not the only means employed by oil companies to combat this corrosion. Rees, Quimby, and Oosterhout, The Texas Co., presented a paper on the use of lecithin, a phosphatide derivative from soybeans, at the November, 1940, meeting of the American Petroleum Institute. "Although especially processed containers can be obtained," they stated, "this is relatively expensive, and should be avoided if a cheaper and dependable gasoline treatment can be found. Lecithin was tried in this connection and found to be extremely effective in eliminating this formation of zinc oxide in the absence of water, and in materially reducing it in the presence of water when used in dosages of 5-15 lb/1000 bbl.

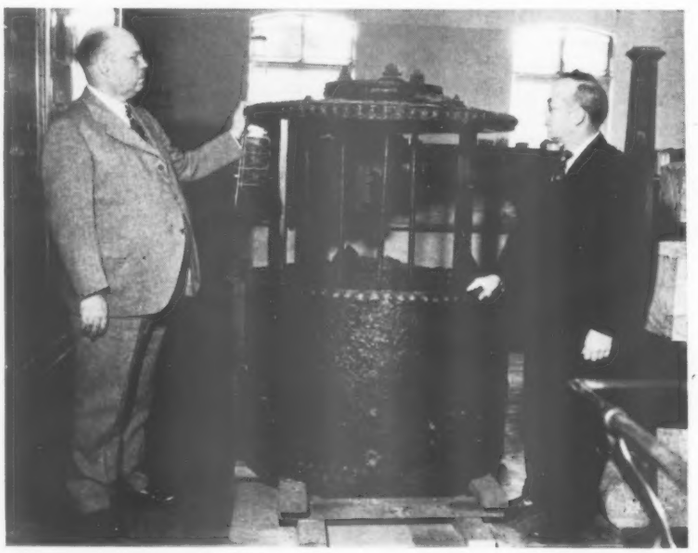
"It has been noted also that leaded aviation gasoline, particularly, sometimes was decolorized or changed from blue to pale green by the action of the lead on the galvanized drums in the presence of water. This decolorization also was found to be practically eliminated by the use of lecithin." Cost of such treatment was said to range from .04 to 0.56 cent per barrel.

Frank W. McCurry, Derby Oil Co., took part in the discussion of this paper and presented results obtained in using an activated glyceride, also from soybeans.

Exhibit Oldest Oil Refinery Still

The oldest petroleum refinery still in the western hemisphere, built and operated by Samuel M. Kier, has been installed as a permanent exhibit in the museum of the School of Mineral Industries of Pennsylvania State College. The still was invented by Kier in 1854, some 5 years before the Drake well was drilled at Titusville. It was given to the college by a son of the inventor.

The still is of 6 barrels per day capacity. It has suffered considerable disintegration through rust, the wrought iron upper side walls being almost wholly eaten away as shown by the accompanying picture. It is planned to restore the apparatus as far as possible, using a transparent plastic material. The exhibit will also include a bottle of crude petroleum which Kier marketed before he established his refinery.



Joseph S. Moorhead, left, executive secretary of Pennsylvania Grade Crude Oil Assn., and Dean Edward Steidle, of the Pennsylvania State School of Mineral Industries, examine the oil industry's first petroleum still

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Refinery Uses of Molded Carbon Described at W.P.R.A. Meeting*

By M. J. Dorcas†

Splined carbon Raschig rings have more contact area than standard rings. Only 1-inch rings are now available

ABSTRACT

Recent rapid expansion of scrubbing hydrocarbons with alkaline solution for removal of sulfur makes large application for carbon in refineries in the form of Raschig rings. Carbon rings last indefinitely in this service and are non-catalytic. Most of these towers contain 550 to 1000 cu. ft. of rings.

Among many physical and chemical properties which have made a wide application of molded carbon products are its inert ceramic-like character and its resistance to corrosive material and to oxidation under 660°F. In the form of graphite it is a better heat conductor than iron, making it practical for heat exchanger construction where pressures are under 60 psi. and temperatures under 350°F.

Such varied applications as in tower structures 70 feet high and weighing 500,000 pounds fabricated entirely from carbon, heat exchangers, piping and fittings, piston rings for handling hydrocarbons or solvents for them, and many others indicate the wide range of usefulness of molded carbon products.

CARBON is more or less familiar to everyone, particularly so to petroleum refineries. Only recently, however, has it been widely used as a structural material. For 75 years coke has been used as a tower packing. The more satisfactory fabricated carbon structural materials have been used only 20 or so years in the process industries.

The term "structural carbon" refers to solid pieces of elementary carbon of either the crystalline graphite or the so-called amorphous forms. Like ceramic articles many minor variations of grades each with different properties and applications are known. These variations of properties exist because of the use of different raw materials and varying methods of manufacture.

A word about the manufacture will aid in understanding the nature and properties of structural carbon. The basic raw material is some form of elementary carbon such as coal, charcoal, lampblack. Usually petroleum coke is the starting point. This basic carbon material is ground and sorted and mixed according to particle size with pitches and tars. The heated plastic mass is then formed by pressure—that is, extruded or molded to the approximate shape and size of the desired finished piece. The "green" piece is then baked under suitable controlled conditions in a reducing atmosphere at a temperature much higher than a "red heat". The pitches and tars are thus carbonized or charred leaving the entire piece in the original size and shape and all of one solid dense hard black homogenous piece of elementary carbon that might be called "black ceramic material". These carbon pieces, if heated to the maximum temperatures of the electric furnace, undergo a molecular metamorphosis and become graphite. Carbon and graphite are both elementary carbon—but are allotropic forms of the same element with different physical properties.

Ceramic-like Carbon

Carbon, so prepared in pieces which may vary in weight from half a gram to ten tons, is similar in some ways to ordinary ceramic material. It can be used for construction purposes much as ceramic or earthenware materials are. This raw material has some porosity similar to unglazed earthenware and if used for pressure vessels some seepage of liquids may result.

Ceramic ware may be made impervious by glazing. So also carbon may be made impervious by impregnating with various synthetic resins. Such impervious carbon or graphite is known on the market as "Karbate" structural materials. Under some conditions, it may be desired to enhance the porosity of carbon. This can be done by proper selection of the size of particle used at the beginning of the manufacturing process. Porous material can thus be prepared that is widely applicable as a filter material and as a diffusing medium. It combines the desirable chemical and physical properties of carbon and graphite with the unique advantages of being

*Presented at the annual meeting of the Western Petroleum Refiners Assn., Hot Springs, Ark., April 16-18.
†National Carbon Co., Cleveland.

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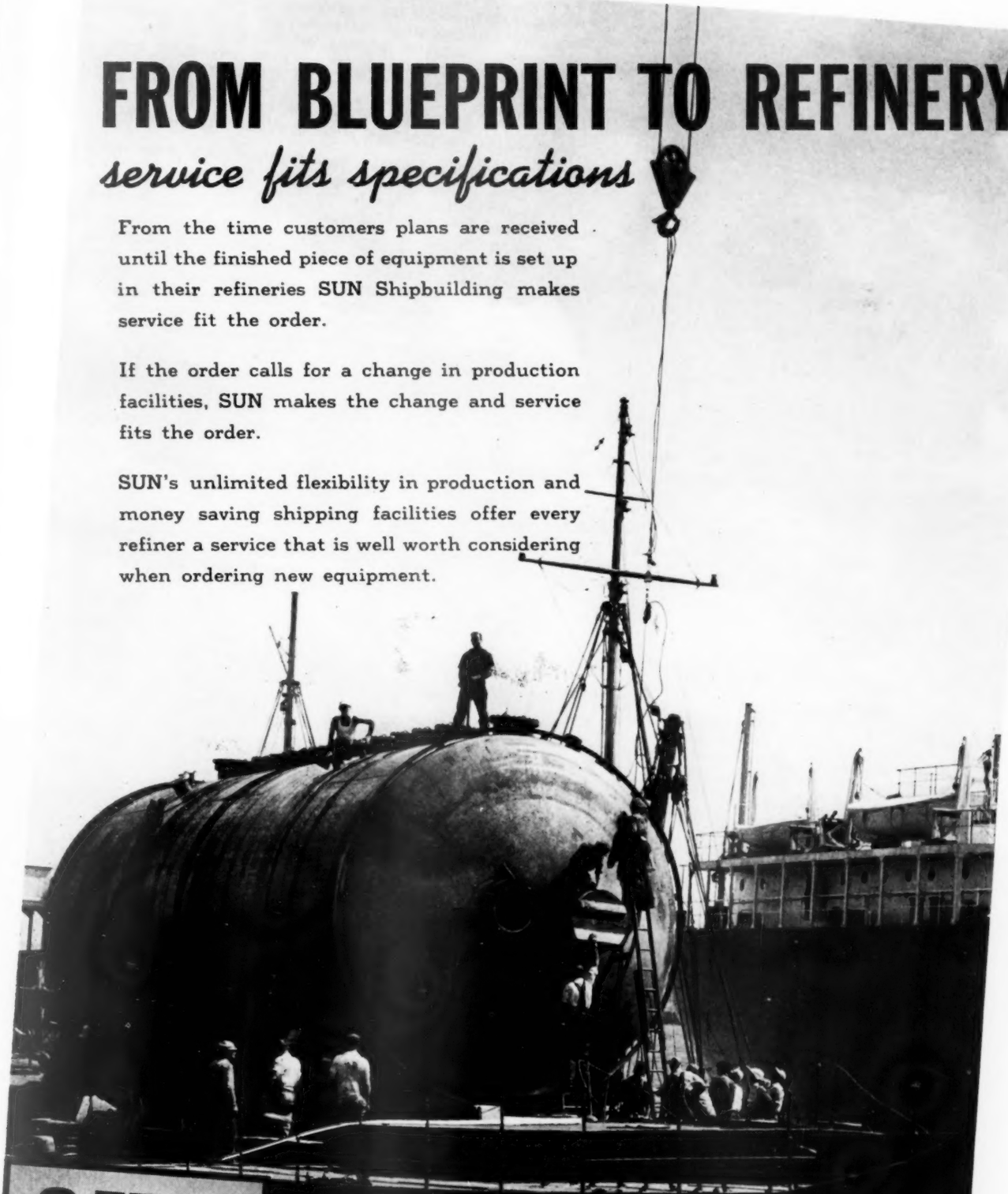

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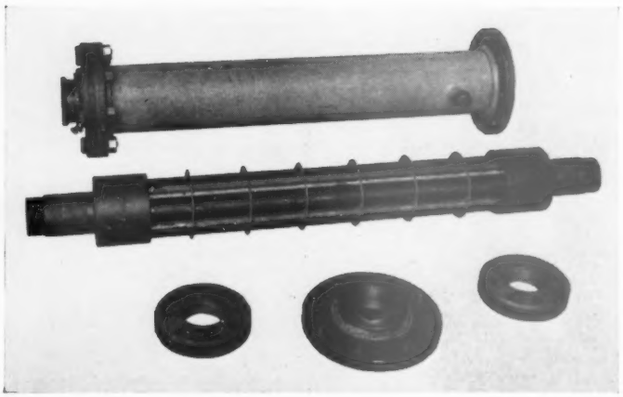

The bundle of tubes in this heat exchanger is all of carbon except the spacers. The tubes are sealed into the headers by special cement.

able to have a material of a uniform and controlled pore size. These advantages are possessed by no other commercially available porous material. The materials are known on the market as "Carbocell", porous carbon, and "Graphicell", porous graphite respectively.

These various forms of carbon and graphite are used in the process industries generally and in the petroleum refining industry particularly because of their unusual chemical and physical properties. That is, the chemical properties make them desirable construction materials and the physical properties are such that it is practical to use them for construction materials.

Chemical and Physical Properties

Almost the only chemical property of carbon of importance is that it is a good reducing agent at high temperatures. In other words, it is chemically a very inert substance. This makes it ideal as a structural material for badly corrosive materials. Briefly, it is unaffected by fluorine, acids, and alkalies as such. Being a reducing agent, it can be oxidized, but with difficulty, for instance, air or other gases containing oxygen slowly oxidize it only at temperatures above 660°F. In the absence of oxidizing agents, there is no temperature limitations to its use. Even in those conditions where oxidation takes place, the oxidation products are gaseous oxides of carbon and are generally not considered undesirable contaminants.

The physical properties are such that the material is easily adapted to most construction problems. It is black, a minor property, important when used as a pigment, but of some importance where radiation problems are involved. It has a density of about 100 lb. cu. ft. It is thus comparatively light in weight, facilitating construction and permitting light foundations. It is strong enough to permit the building of any size structure required. Molded or extruded shapes provide pipe, brick, and other desired forms, but in addition, the material can be machined. That is, it can be cut or sawed, turned, threaded, planed, and even polished, permitting the fabrication of any desired piece of apparatus.

Carbon has a very low coefficient of expansion with varying temperatures. This makes it immune to thermal shock. Any temperature cycle can be used without fear of cracking or spalling from sub-zero temperatures to the high temperatures of the electric arc. Carbon does not melt! It retains its solid form and most of its strength to temperatures of the electric arc at which all other materials have softened, melted, and indeed volatilized.

Carbon and particularly graphite are good conductors of electricity which permits their use under corrosive or high temperature conditions as heating elements and as electrodes both for electro-thermal and electrolytic work.

Thermal conductivity is important in many process structures. Carbon is a poor conductor of heat and sometimes is used as a chemically inert heat insulator. Graphite, on the other hand, is a very good conductor of heat and is used for the fabrication of heat interchangers. Being between iron and copper in thermal conductivity, it can be used for heating or cooling coils and evaporator tubes and because of its inertness frequently replaces the expensive noble metals and special alloys for this purpose.

Properties Make Wide Application

These properties logically lead to a wide application. Carbon Raschig rings and bubble caps withstand most acids and alkalies indefinitely. They do not soften with time; they do not spall due to thermal shock. Brick build a multitude of structures, pickle tanks and vats and digestor linings, ducts and furnace and ladle linings, pipe and fittings including valves handle, without contamination, most all corrosive solutions including hydrofluoric acid. Pipe of graphite promotes high efficiency evaporators and heat exchangers that give no metallic contamination to the materials handled. Mold plugs, stopper heads, and sintering trays find metallurgical applications. Entire towers and plants for gas purification treating, distillation, etc., are made of carbon. They vary in size from ¼-inch Raschig rings to Cottrell electrostatic precipitator towers constructed entirely of carbon and weighing half a million pounds.

These general applications now become specific applications for our consideration in the petroleum refineries. Probably the largest quantities of carbon used in the petroleum industry are in the form of tower packing. Metallurgical or petroleum coke in lump form had become

A Cottrell precipitator with 64 tubes constructed almost entirely of carbon materials. It is nearly 27 feet high with 14-foot sides and has a 20-foot stack. A still larger one with 117 tubes has been built

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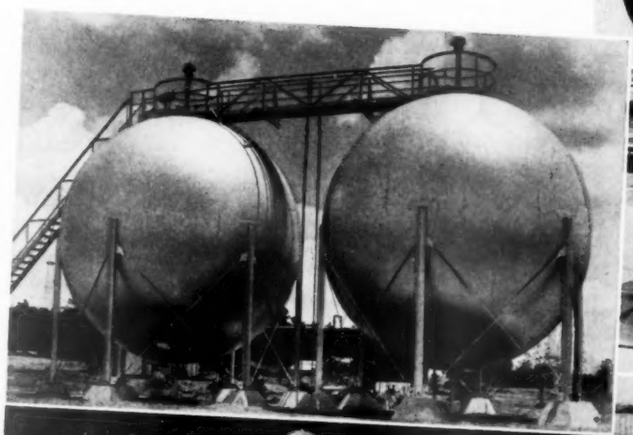

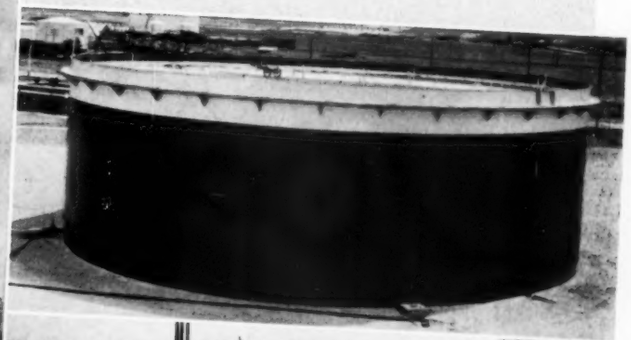

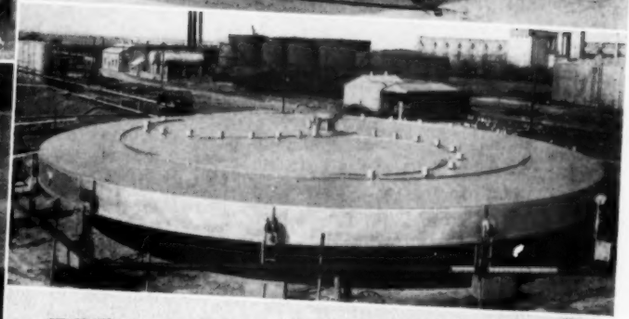

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Standard carbon Raschig rings range from ¼ to 3 inches in diameter. Light weight, long life, and non-catalytic quality are three advantages claimed in treating operations

standard tower packing for alkali solutions in the last century. Early in this century special forms of packing material came into general use. These forms such as the plain cylindrical Raschig rings made scrubbing treating towers much more efficient than they were when they were packed with lumps of coke or stone. They have less back pressure or pressure drop, more free space, more surface of liquid exposed to the gas and consequently, greater capacity per inch of tower volume. Only about 15 years ago did rings of carbon become available. They made it possible to secure a combination of the advantages of chemical inertness of carbon or coke and efficiency of ring shape.

Carbon Raschig Rings

With recent rapid expansion of scrubbing hydrocarbons with alkaline solution for removal of sulfur, we find carbon Raschig rings widely used in refining. Sour gases are sweetened and excess sulfur removed from petroleum products by various alkaline liquids in carbon Raschig ring packed towers. The liquids include amines, alkali phosphates, carbonates, and other special salts, and even caustic soda. The carbon rings last indefinitely under these conditions. Continuous service with even boiling concentrated caustic soda has no detrimental effect on them. This property is not possessed by any other commercially available tower packing material so far as I know.

Various modifications of the shape of the standard Raschig ring are commercially available but they are seldom used in large quantities. The plain ring seems to be near the ideal shape. Modifications in the height of tower and size of rings frequently are found giving different numbers of theoretical plates, corresponding scrubbing efficiencies and, of course, varying flooding rates and pressure drops. Rings from ¼-inch to 3-inch diameter are used but most rings used in refineries are the 1-inch and 1¼-inch size. These packed towers range in size from a few cubic feet of volume to some that contain 14 carloads of rings. The majority of towers of the types discussed contain 500 to 1000 cubic feet of rings.

The resistance of carbon rings to thermal shock requires their use in some towers where caustics or alkaline solutions are not used. Some towers similar to stabilizing towers have a rapid change of temperature occasionally, especially at the bottom of the tower. Carbon rings are used here because they do not spall, chip, nor weaken no matter how frequent or severe the temperature changes may be.

Carbon rings find a use in packed towers for counter current extraction of lubrication or other oils with solvents. Maximum efficiency of the extraction is obtained in this way, carbon is used for three separate reasons. Some solvents are corrosive, which in entering resisted by the carbon; carbon rings are selectively wetted by certain substances which aid in getting a maximum of surface exposed to a given quantity of solvent; and the carbon rings are noncatalytic which minimizes undesirable side reactions in some cases.

Carbon rings, especially in the small sizes, are used as supports, or carriers, for catalysts. They give a fine support with large surface. Sometimes carbon rings are used in refineries not for the reasons of their special physical or chemical properties as just described but are used because of their low initial cost, light weight with consequent low freight and foundation construction charges make them the cheapest found tower packing to use.

Filling scrubbing towers with carbon rings does not entirely solve all of the problems involving materials of construction in an oil refinery. A logical extension of the idea helps some. Not all towers are filled with tower packing and almost all contain accessory equipment. Carbon has been used to make grids to support the packing, distributor plates and trays. Not all reaction towers are packing towers—some are plate towers and bubble cap towers containing the plates, trays, or bubble caps. In the specialty, by-product and chemical divisions of refineries, the requirements for towers become quite complex —sometimes involving heaters, dephlegmating coolers, spurge pipes, etc. These are all obtainable from carbon (as illustrated by the pictures).

70-Foot Tower of Carbon

The tower walls themselves are subject to all the chemical and thermal forces that affect the contents and accordingly are constructed of carbon. Tower sections up to 48 inches outside diameter are available at present, larger towers are constructed of brick or slabs. There seems to be no limit to the size of structure as evidenced by the erection of satisfactory Cottrell electrical precipitator towers entirely of carbon. These structures are sometimes 70 feet high and weigh 500,000 lbs.

For 20 years the tubes and tube sheets of Cottrell precipitators used in connection with sulfuric acid concentrators have been in common use. The idea of building the entire tower of carbon was adopted first in the phosphoric acid industry where the presence of free fluorine makes the use of clay walls impracticable. In more recent years the demand for sulfuric acid in petroleum refining has increased or, in some cases, revived. As new precipitator towers are being built, or rebuilt, carbon is being used as the structural material for two reasons. First, the chemical resistance of carbon insures permanent life of a tower even if operated at temperatures and acid concentrations so high that lead and ceramic material are subject to early failure and second, the use of large slabs and beams instead of brick of ordinary size permits a very rapid construction of a tower and loss of use of the equipment due to shutdown for rebuilding is a minimum. Plain carbon brick having a low heat

A carbon distributor plate used at the top of a ring-packed tower to assure proper distribution of liquid. Large center tubes allow passage of gas from below

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transfer have a minor use as a heat insulating lining under some specialized conditions.

"Karbate" graphite pipe and fittings, which is the impregnated impervious material, have two types of uses. One is for conveying systems handling corrosive substances. The other is for heat exchangers of various types which utilize the great ability of graphite to transmit heat. Graphite pipe being unaffected by most corrosive solutions handles with safety the most corrosive of the treating reagents and the more common but troubesome brines. In this service, this graphite material can be used where iron is sometimes used but where iron is troublesome because it must be replaced at short intervals and also is used instead of the very expensive and sometimes difficult to obtain special alloys.

Graphite Heat Exchangers

These graphite products are readily fabricated into the various forms of heat exchangers such as atmospheric or cascade coolers, bayonet or candle heaters, counter current concentrator tube exchangers, immersion type bundles and tube and shell floating head type exchangers.

These pipe and heat exchanger applications have been chiefly in the treating, chemical and by-product divisions of refineries that are becoming more prominent and also less easy to distinguish from any other part of the modern refinery. Impregnated graphite pipe for brine disposal and for cooling oil with sea water deal with crude oil or at least the very early stages of the refining process.

This pipe should not be used at pressures greater than about 60 lb., and at temperatures higher than about 350°F. These limitations make it impractical for use in some high temperature, high pressure cracking operations. Most of the severe corrosion problems of refineries that are not satisfactorily met with steel equipment, however, fall within the field of "Karbate" material applications.

A very different type of application of graphite is for piston rings and piston rod packing where hydrocarbons or solvents for them are handled. Graphite has the properties of a lubricant, as a piston ring or piston rod packing, it needs no other lubricant to prevent wear and to reduce friction. Gas pumps that may condense hydrocarbon vapors at some parts of the cycle sometimes give trouble since the liquified hydrocarbons wash out lubricating oils and greases. The problem can be solved by ring packing and rings that are themselves the lubricant. It is not expected that graphite will replace oils and greases as lubricants for pumps in general, but it is very useful in these specialized cases where oils and greases are constantly washed away by solvents.

Carbon and graphite made porous somewhat like a rubber sponge finds application in the fabrication of fillers and diffusion apparatus. The pore size of this material can be controlled giving a uniform and controlled size of bubble which is of advantage in treating a liquid with a gas. As a filter, it is usually used with a filler acid and bubbles the most corrosive solutions—for instance 25% sulfuric acid.

Pipeline Cathodes

Two other carbon and graphite products should be mentioned. They are anodes for cathodic protection systems and graphite powders. They might be called structural materials or perhaps could be called consumable supplies.

Cathodic protection of pipe lines is well known and established. We also find pipe lines and tank bottoms in the refineries sometimes cathodically protected against corrosion and also sometimes the interior of tanks, condensers, and boilers. A direct current is applied to the structure to be protected, making it the cathode and a piece of carbon or graphite the anode. As long as a suitable potential is maintained, the corrosion all takes place at the anode. This can be renewed at small cost, if necessary, but the metal structure remains uncorroded. Because of differences in the electrochemical equivalent and the over voltage at a carbon electrode, it lasts many times as long as iron or other metals sometimes used. If chlorides are present, it is advantageous to use graphite as the anode material since it is more nearly permanent as an anode in the presence of chlorine than any other known commercial substance.

Graphite in powdered form is frequently mixed with grease to the extent of 1-2% to make a graphite grease. Both natural and artificial graphites are used. The artificial graphites can be practically free from ash, being made from graphitized petroleum coke which has but little, if any, ash in it. Graphite seems to assist oil to cling to metal and is a valuable filler for grease. Less fine grades have been used by refineries as a paint constituent. While not a refinery application, it is interesting to note that graphite powder has been used as a constituent of special drilling needs in the field.

Aviation Fuel Specifications Proposed as A.S.T.M. Standard

The subcommittee on gum of the American Society for Testing Materials has completed its work in endeavoring to "liberalize" the description and dimensions of the apparatus specified in the Test for Gum Stability of Gasoline (D 525 — 40 T) and recommended adoption of the revisions at meetings of Committee D-2 recently in Washington. The subcommittee also released the procedure for determining potential gum in aviation gasoline which it recommends be published for information and which will be used as a basis for future co-operative work on aviation gasoline stability.

One of the important recommendations coming from the meeting of Committee D-2 is to submit for approval as an A.S.T.M. tentative standard, proposed specifications for aviation gasoline. These cover three grades with minimum octane numbers of 73, 91, and 100.

A number of minor changes were recommended in the Test for Tetraethyl Lead in Gasoline (D 526 — 39 T). The subcommittee in charge plans to undertake co-operative work with other A.S.T.M. committees who are concerned with standardized procedures for determining lead.

The subcommittee on sulfur determination reviewed the unfavorable reactions to the proposed procedure of utilizing an oxygen-carbon dioxide combustion atmosphere in the lamp method for determination of sulfur. It was voted to recommend a revision of the present Tests for Sulfur in Petroleum Oils by Lamp Method (D 90 — 34 T), the changes being the use of the purified air supply, and the use of a fritted glass plate in the absorber.

As a result of co-operative work to evaluate a new procedure for saponification number which utilizes methyl ethyl ketone, the group concerned with neutralization number and saponification number recommended that this procedure be incorporated in Methods of Test for Saponification Number (D 94 — 39 T). Last year a proposed method of test for neutralization number was published as information, and since experience with this procedure has proved satisfactory, the subcommittee recommends that it replace the existing Tentative Method D 188 — 27 T. The subcommittee also recommended that the new so-called "General Motors Rapid Method" and a potentiometric method for neutralization number be published as information.

A new procedure for determining the oil content of wax, based upon the insolubility of paraffin wax in methyl ethyl ketone at —25° F., has been developed and further co-operative work will be done to determine the advisability of recommending the issuance of this method as a proposed standard.

The subcommittee on viscosity which suggested in January the desirability of a third type of viscosity oil standard of low viscosity, in addition to the alpha and beta oils, reported in Washington on the correlation of conversions from viscosity expressed in centistokes at 122° F. and Saybolt Furol viscosity obtained at the same temperature.

Mellon Institute Reports on Petroleum Research

A MASS spectograph has become a part of the research laboratory equipment of the Gulf Research and Development Co. multiple fellowship at Mellon Institute for a program of investigation on hydrocarbon decomposition, it is shown by the Institute's 28th annual report, just issued. With it, it is hoped to observe the variations, with increasing temperature, in the strength of carbon-carbon and carbon-hydrogen bonds. This fellowship, long in progress under Dr. W. A. Gruse, has moved forward in the study of micro-analytical methods, the report states.

"The aniline-point procedure employing 0.5-cc. samples has been in routine use for some time and is said to be quite dependable. The micro-method for titration of organic acidity, corresponding to neutralization number, has been worked out and applied satisfactorily to oxidized oils; it is most successful where the acid number is relatively high. Samples of the order of 0.05 cc. can be examined with an accuracy conservatively estimated at 10%. The end point is recognized by a photoelectric cell technique.

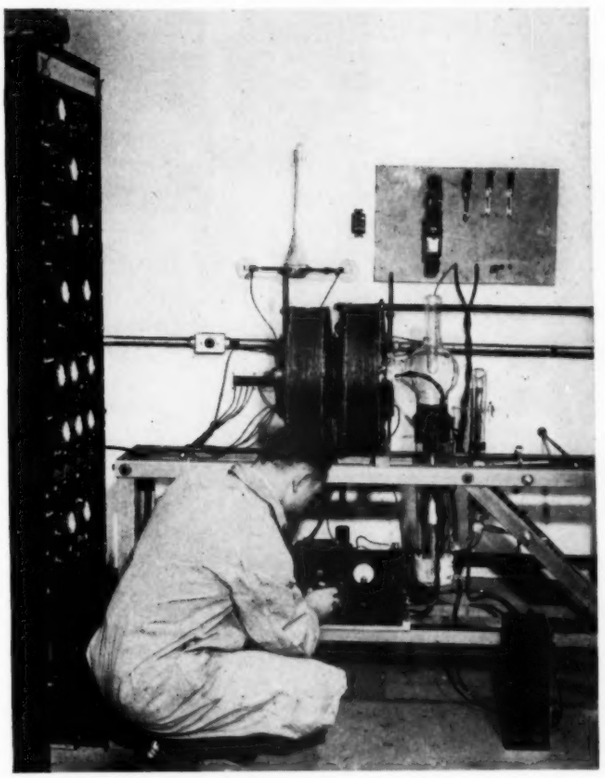
"Research on fractionation in vacuum is in action, with emphasis on locating suitable means for evaluating column performance under diffusion pump vacuum," report continued. "Inquiry is being continued on the chemical constitution of the high-melting waxes in petroleum and of certain higher molecular weight lubricating oil materials. Two high-efficiency extraction columns are in steady operation. The chemistry of the sulfur compounds in certain gasolines and of desulfurization methods is under investigation. Studies in the correlation of crude oils with geological environment have yielded a method for distinguishing between crudes produced from the same horizon and regarded as practically identical by true boiling-point distillation. The prototype engine work on engine deposits has been carried on with vigor and a paper on piston deposits was published.

"As holder of the oil cleaner fellowship of the Fram Corp., G. O. Ebrey, formerly with Pennzoil Co., has examined the solid sludge from many samples of various types of used lubricating oil and has developed an improved apparatus for laboratory determination of the sludge content of such oils. Through this technique the sludges have been recovered in dry form whereby their physical characteristics can be observed. The study of these sludges is fundamental in designing the type of filter required for their removal. Along the same lines, a special apparatus has been devised for the laboratory clarification of used or oxidized oils." Descriptions of these two pieces of apparatus were presented at the annual meeting of the American Chemical Society in St. Louis, April 7-11, 1941.

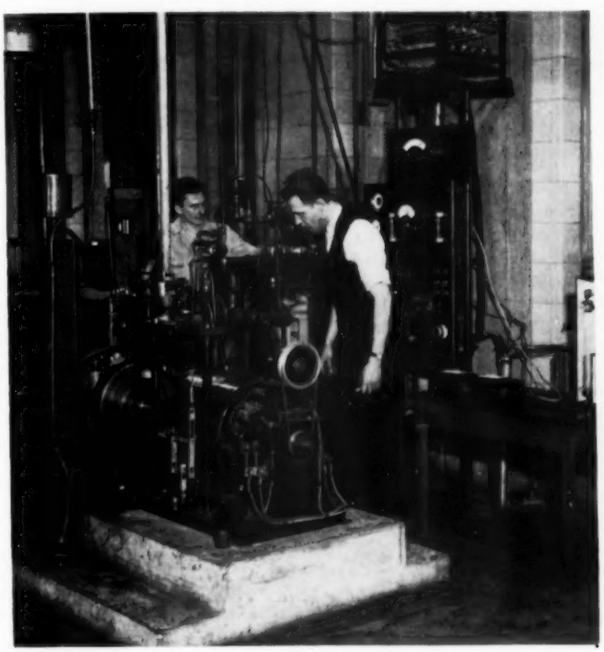
"With the aid of these procedures, a study has been made of the fundamental principles involved in the removal of solid sludge by mechanical straining action. The physical requirements of a suitable filter medium have been determined and defined and the essential features of design for a more efficient long-life filter cartridge have been established. The advantages and disadvantages of both the conventional cylinder type cartridge, containing fibrous or granular materials, and the extended filtering surface type cartridge have been studied. An investigation has also been conducted on the wear effects of various sizes of abrasives in oil.

"Many filters evolved in the past have been built without reference to certain very simple mechanical limitations to their efficient action. One of the most important principles in filter operation has been found to be the simultaneous use of a retentive large filtering area with adequate available sludge deposition space and freedom of flow which only terminates when the useful filtering area has been exhausted."

To extend the utility of refined petroleum jelly, the



With this mass spectrograph, in use at Mellon Institute, it is hoped to observe the strength of carbon-carbon and carbon-hydrogen bonds in an investigation of hydrocarbon decomposition



Ring-sticking in internal combustion engines is being studied with this equipment

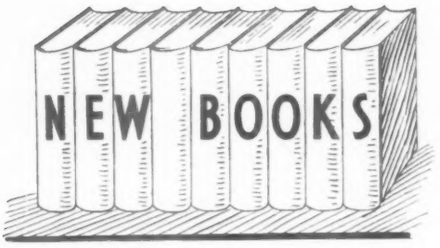
The S.A.E. extreme-pressure lubricant test machine is being used in research on lubricating oil additives

Chesebrough Mfg. Co. has established a fellowship with W. S. McClenahan as the incumbent.

"The work has begun with a broad investigation of the chemical and physical nature of crude petrolatum stocks. It is anticipated that the information disclosed by this research will greatly facilitate the development of new products and manufacturing processes and also will add valuably to the available knowledge of the composition of petrolatum," report said.

New lubricants especially valuable for watches, clocks, meters, scientific instruments, and other apparatus requiring a lubricant that will remain effective under conditions where a continued delivery of lubricating agent cannot be readily provided, have been developed by G. E. Barker on an Elgin National Watch Co. fellowship. "The novel oils, products of synthetic organic chemistry . . . are non-spreading, non-corrosive, chemically stable, and essentially nonvolatile. They possess low pour and solidification temperatures, high viscosity indexes, and good boundary lubrication qualities. One of these oils has been put into commercial use.

"J. A. Shaw of the gas purification fellowship, sustained by the Koppers Co., had described a rapid method for the determination of hydrogen sulfide and mercaptan sulfur in gases and in aqueous solutions, by which these compounds are totally absorbed in a specially prepared cadmium chloride solution in a new type of flask, and then are estimated by the iodometric titration under definite conditions that eliminate several sources of error without appreciable increase in time and manipulation. This procedure has received cordial attention in the gas industry."



Handbook of Chemical Patents

A Handbook of Chemical Patents by Edward Thomas has been published with the object of showing the typical chemist where the problems facing a chemical inventor lie, and how these problems may be met. The present work supplements "The Law of Chemical Patents" which summarizes that law up to the middle of 1937 by presenting the effect of many changes both in statute and in attitudes of the Courts. The book enables attorneys to locate rapidly any pertinent new cases on chemical inventions decided in the last two and a half years, the author states.

The book contains 23 chapters starting with the blunt factual title, "You Can't Keep a Chemical Secret", followed by suggestions for writing the specification and claims; anticipation of a process, composition of matter, manufacture, chemical apparatus, and prior publications; infringements, applications, interferences, assignments, patent suits, and foreign patents. These and other subjects make up the chapter headings of the book.

This 270-page book is obtainable from the Book Department of NATIONAL PETROLEUM NEWS at $4.

* * *

Time of Origin of Petroleum

The Time of Origin and Accumulation of Petroleum is the title of the last issue of the Colorado School of Mines Quarterly, a 180-page paper-bound book containing as much material as would ordinarily require 300 pages. F. M. Van Tuyl and Ben H. Parker, the authors, have prepared this report under the sponsorship of the Research Committee of the American Association of Petroleum Geologists. They are members of the Department of Geology of the college.

The book is divided into chapters which correspond with questions formulated for a questionnaire sent to a large number of petroleum geologists. A large volume of correspondence developed in connection with information presented by contributors. There are 25 chapters dealing with various phases of the subject. The book is obtainable at the Colorado School of Mines, Golden, Colo., at $2.

* * *

Fluid Mechanics

A text in Fluid Mechanics has been prepared by Glen N. Cox and F. J. Germano, Louisiana State University, as the result of four years of experience in teaching the subject to engineering students. The book is intended to prepare students for problems encountered in industry and little space is given to abstract hydrodynamical reasoning, therefore.

There are five main divisions in the book: hydrostatics, measurement of fluids, transportation of fluids in closed and open channels, dynamics of fluids, and centrifugal pumps. Since students were found lacking in knowledge of viscosity and dimensional analysis, short chapters are included on these subjects.

The book contains 275 pages and is intended primarily for classroom work. D. Van Nostrand Co., 250 Fourth Ave., New York, is the publisher. Price is $3.

Control Point Computed for Cracking Furnace

By R. E. Summers†

IN CONTROLLING the temperature of oil issuing from an oil heater or from one section of a tube still, Fig. 1, it is often desirable to locate the control point ahead of the outlet. The temperature encountered by the temperature sensitive element at such an "anticipation point" may fluctuate more widely or change earlier than the outlet temperature itself, but if held within narrow limits it can be made to give uniformity to the efflux temperature. It seems but logical that control of temperature in a section of a cracking still should be from a control point at which the cracking rate is about average for the section.

As Bergman* has pointed out, in heaters operating with a straight-line temperature curve the outlet temperature may be most sensitive to changes in the firing rate. The fact remains that where coking is encountered location of control at an "anticipation point" will give more consistent results over long periods of time. The same is true when flow changes occur.

One may approximate the fraction of the transit through a still section at which average cracking should be found.

Let nomenclature and assumptions be as follows:

t_i	= Temperature at section inlet.
t_o	= Temperature at section outlet.
t	= Temperature at any specified position along the heater tube, that section.
r	= Rise in temperature necessary to double the cracking rate.
L	= Transit through heater section, measured as a fraction of total travel, L_o.
V	= Cracking velocity, product per unit of time for unit length in the section where the temperature is t.
V_i	= Cracking velocity at inlet to the section.
$V_{avg.}$	= Average cracking velocity for the section.
C	= Cracked product, yield for the section, per unit of time.

The relation between temperature rise and transit of oil through the tube is regarded as linear. Such a straight-line heating curve is often approximated in rather considerable lengths of tube, representing sections of certain stills.

It has been formulated by Nelson** that

$$V = V_i\, 2^{\frac{(t - t_i)}{r}}.$$

From original assumptions, as depicted by the temperature gradient of Fig. 2, it appears that the rise in temperature per unit length of tube is

$$= \frac{(t_o - t_i)}{L_o}$$

and, from the diagram, it follows that

$$t = t_i + \frac{(t_o - t_i)\,L}{L_o}$$

Since, other things being equal, total cracking is proportional to area of tube surface, and

$$V_{avg.} = \frac{C}{L_o}$$

But, mathematically, and as indicated in Fig. 3,

$$dC = V dL, \text{ and } C = \int V dL.$$

†Associate Professor Mechanical Engineering, University of Minnesota.

Substituting in the expression for average cracking velocity,

$$V_{avg.} = \frac{1}{L_o}\int V dL.$$

The variable, V, may be expressed in other terms, since

$$V = V_i\, 2^{\frac{t_i + \frac{(t_o - t_i)\,L}{L_o} - t_i}{r}},$$

$$V = V_i\, 2^{\frac{(t_o - t_i)\,L}{L_o r}}.$$

Designating $\frac{(t_o - t_i)}{L_o r}$ as k,

$$V = V_i\, 2^{kL}.$$

Substituting for V,

$$V_{avg.} = \frac{1}{L_o}\int V_i\, 2^{kL}\, dL = \frac{V_i}{L_o}\int 2^{kL}\, dL,$$

gives an integral of the form,

$$\int b^u\, du = \frac{b^u}{\log b},$$

wherein $u = kL$ and $du = k dL$.

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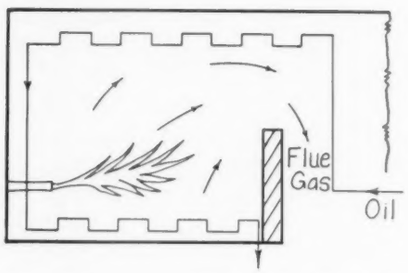

Fig. 1—Diagrammatic sketch of oil still showing tube sections

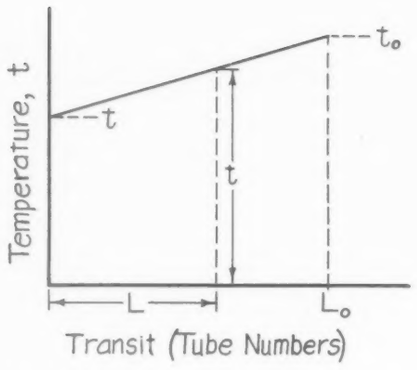

Fig. 2—Straight line heating curve indicating variation of oil temperature throughout the still section

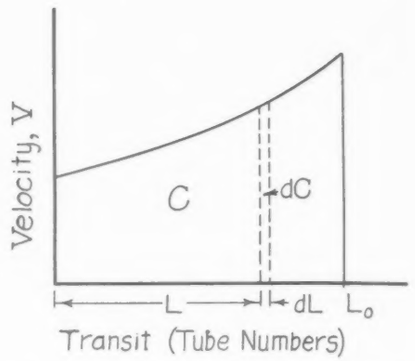

Fig. 3—Relation of cracked product yield to cracking velocity in a still section

Thus, grouping terms,

$$V_{avg.} = \frac{V_i}{kL_o}\int_O^{L_o} 2^{kL}\,kdL\,.$$

Integrating,

$$V_{avg.} = \frac{V_i}{kL_o}\left[\frac{2^{kL}}{\log_e 2}\right]_O^{L_o} = \frac{V_i}{kL_o\log_e 2}\left[\,2^{kL}\,\right]_O^{L_o}, \text{ or}$$

$$V_{avg.} = \frac{V_i}{kL_o\log_e 2}\left[2^{kL_o} - 2^{\circ}\right].$$

Replacing k by $\dfrac{(t_o - t_i)}{L_o r}$,

$$V_{avg.} = \frac{V_i\left(2^{\frac{L_o(t_o-t_i)}{L_o r}} - 1\right)}{\dfrac{(t_o-t_i)}{L_o r}(L_o)(\log_e 2)} = \frac{V_i\left(2^{\frac{(t_o-t_i)}{r}} - 1\right)}{\dfrac{(t_o-t_i)}{r}(2.303\log_{10}2)}\,.$$

In order to determine the position along the tube at which mean cracking occurs, L is computed from the final equation for $V_{avg.}$. The expression

$$V = V_i\,2^{\frac{(t_o-t_i)L}{L_o r}}$$

may be expressed in logarithmic form as,

$$\log V = \log V_i + \frac{(t_o - t_i)\,L\,(\log 2)}{L_o r}\,.$$

Solving for L,

$$L = \frac{\log\dfrac{V}{V_i}}{\dfrac{(t_o-t_i)}{L_o r}(\log 2)}\,.$$

Substituting $V_{avg.}$ for V,

$$L = \frac{\log_{10}\dfrac{V_i\left(2^{\frac{(t_o-t_i)}{r}} - 1\right)}{V_i\dfrac{(t_o-t_i)}{r}(2.303\log_{10}2)}}{\dfrac{(t_o-t_i)}{L_o r}(\log_{10}2)}\,.$$

Since $\dfrac{1}{2.303\log_{10}2} = 1.44$, and $\dfrac{1}{\log_{10}2} = 3.32$,

$$L = 3.32\,\frac{(L_o r)}{(t_o - t_i)}\log_{10}\left[\frac{1.44\,(r)\,\left(2^{\frac{(t_o-t_i)}{r}} - 1\right)}{(t_o - t_i)}\right].$$

This special value of L is the distance from the section inlet at which average cracking rate occurs.

A substitution should make use of the equation clear. Consider a case where L_o is the total length of 50 equal length tubes, $t_i = 870$ °F., $t_o = 935$ °F., and $r = 24$ F. degrees; then,

$$L = \frac{(3.32)\,L_o\,(24)}{(935) - (870)}\log_{10}\left[\frac{(1.44)\,(24)\,\left(2^{\frac{(935)-(870)}{24}} - 1\right)}{(935) - (870)}\right]$$

$$L = 0.574\,L_o.$$

The mean cracking occurs in the $(0.574 \times 50 = 28.7)$ *twenty-ninth* tube from the inlet, which, as indicated in the opening paragraph, should be the point at which to control temperature in this section of a cracking still.

* Bergman, D. J., "Application of Automatic Control in the Oil Industry," *Trans. A.S.M.E.*, 60:651-6, (Nov. 1938).

** Nelson, W. L., *Petroleum Refinery Engineering*, (McGraw-Hill Book Co.), p. 330, (1936).

New Patents

Compiled by R. E. Burnham, patent and trade-mark attorney, 511 Eleventh Street, NW, Washington, D. C., from whom copies may be obtained at rate of 25c each. State number of patent and name of inventor when ordering.

March 11, 1941

Converter and fluid manifolding device therefor—E. J. Houdry and R. C. Lassiat, assignors to Houdry Process Corp. Filed Aug. 15, 1934. No. 2,234,169.

Conversion of olefin hydrocarbons—E. L. Kanhofer, assignor to Universal Oil Products Co. Filed Nov. 4, 1938. No. 2,234,177.

Process of making heavy fuel oil—E. W. Thiele, assignor to Standard Oil Co. (Ind.) Filed Oct. 19, 1938. No. 2,234,207.

Method of treating vapors—W. A. Schulze, assignor to Phillips Petroleum Co. Filed Oct. 6, 1936. No. 2,234,505.

Beneficiating naphthas—R. E. Burk, assignor to Standard Oil Co. (Ohio) Filed Sept. 10, 1938. No. 2,234,538.

Process for production of lubricating oil—U. B. Bray, assignor to Union Oil Co. (Cal.) Filed July 17, 1933. No. 2,234,549.

Production of hydrocarbons—Eduard Linckh, Germany, assignor to W. E. Currie, New York. Filed Jan. 18, 1937. No. 2,234,568.

Method of producing lubricating oils—Heinrich Tramm, Germany. Filed Dec. 15, 1936. No. 2,234,661.

Treatment of still residues—Joseph Rivkin, Pittsburgh, assignor to Neville Co. Filed Aug. 5, 1938. No. 2,234,708.

Cracking hydrocarbon oils—J. M. Barron, assignor to Texas Co. Filed June 21, 1939. No. 2,234,910.

Process of dewaxing—L. D. Jones, assignor to Sharples Corp. Filed Dec. 2, 1938. No. 2,234,916.

Purification of polyhydric alcohols—T. W. Evans and J. R. Scheibli, and G. H. van de Griendt, assignors to Shell Development Co. Filed June 10, 1939. No. 2,234,400.

Apparatus for vaporizing liquid fuel—W. H. Hoagland, assignor to Shell Development Co. Filed July 25, 1939. No. 2,234,407.

Hydrocarbon (lubricant) composition containing organic boron compounds—Raphael Rosen, assignor to Standard Oil Development Co. Filed Sept. 30, 1937. No. 2,234,581.